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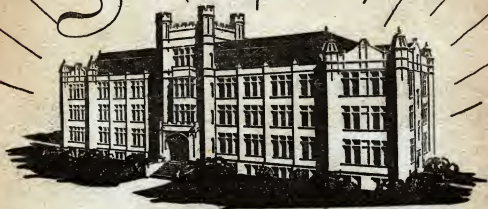
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Volume XXII Number 2

OCTOBER, 1938

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Doughface Jack, a haunted, hunted little man—with a terrible power! He wanted peace—but the world hated and feared him—and hounded him into supreme control!

Science Feature:

- WHY ROCKETS DON'T FLY** Peter van Dresher 81
The technical, and highly involved item that is keeping the rocket down to Earth—money!

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The Open House of Controversy.

Cover by H. W. Brown. Illustrations by Binder, Dold, Orban, Thomson, Wert and Wesso.

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THIS ISSUE, the Editor's Page takes over the broad outlines of this department's functions, working on a year's scope rather than a month's. But for next month alone—the details are available. Item 1. We will present the best astronomical color-plate cover yet. Though an Editor, yet have I personal opinions. One of those personal opinions is that November's is one of the best science-fiction covers ever published. Brown, I think, never did a finer piece of work. And Clifford Simak, in his *Rescue on Gasy Mede*, gave Brown a perfect opportunity for this cover.

L. RON HUBBARD'S *The Trump* concludes in November—with the best of the three parts. And, simultaneously, Nat Schochner's latest novel, *Simultaneous Worlds*, begins. Schochner has a plausible and highly interesting idea of interlocked worlds in a sense not used before in science-fiction. A pair of interlocked worlds with Earth as the lesser of two parallel-but-not-identical environments. It's the first of an excellent two-part novel.

AND WE introduce a style of writing new to science-fiction. The author has appeared before, but never quite such a story as this. Fredrick Arnold Kummer, Jr., has done a story in which the story—the plot—is quite unimportant. It's a story of Mars, of a Mars that's real and alive about you as you read. In it, we present not so much a story, as a painting come to life. I'll be highly interested in your comments on *The Forgiveness of Tetsuo Teen*.

FINALLY—and in more ways than one that applies—we bring back an author who has been missing from science-fiction for years, and with a story singularly appropriate in title. *The Return of the Prowler* brings back *Miracle*, the synthetic, splendid Prowler of the Wastelands, and—Harl Vincent!

The Editor.

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THE ANALYSIS this time—thanks to the data sheets sent in—is mathematical and as close to an accurate estimation of story value as it is possible to come, I believe. It was done in this way: Each sheet sent in by the reader was posted up on a file card. The occupation and age group of the reader was entered on one sheet, then his vote was entered on another. The votes were recorded as point scores after each story. Thus a card selected at random reads: **Who Goes There?, The Terrible Sense, Hell Ship, Jason Comes Home, Asteroid Pirates, and Resilient Planet.** That meant 6 points for **Who Goes There?**, 5 points for **The Terrible Sense**, 4 for **Hell Ship**, and so on.

FINALLY, the maximum possible score was 6 times the number of votes cast. Below are the stories in order of the percentage of that maximum attained.

Who Goes There?	93%	Don A. Stuart
The Terrible Sense	55%	Calvin Perego
Hell Ship	52%	Arthur J. Burks
Jason Comes Home	46%	
A. B. L. MacLachlan, Jr.		
Eviction by Isotherm	33%	Malcolm Jameson

THUS it is spoken! Your decisions are made, and here recorded. But you can do a lot of playing around with these cards, getting various cross-references and re-divisions and classifications. For one thing, the way the different age-groups rated the stories. The 25-year group put **Hell Ship** second. Those over 30 rated **Hell Ship** fourth, with **Jason Comes Home** second, and **The Terrible Sense** third. Every story was voted first place at least once; every story was voted terrible at least once. Time and space limit the discussion of the results. I'd like to list the occupations tabulated—but I'd need another page. Physicists, astronomers, chemists, psychologists, students, farmers, radio technicians, patent expert, rocket engineer, lawyer—Perhaps next month—

The Editor.

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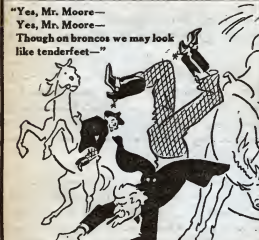
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IN TIMES TO COME

This issue starts *Astounding's* sixth year with Street & Smith; it is appropriate that, to some extent, the Editor's Page become the Department of Prophecy and Future Issues. Last month we reviewed five years of promises fulfilled; now, I'll try to forecast the trends of the year to come.

The *Analytical Laboratory* research data sheets which come in oil during late July and early August have helped me, and will continue to help me in coming issues. That is one trend, and a trend of importance, for it has permitted me to understand you somewhat better. One thing I have been sure of without proof is now proven. Over thirty percent of *Astounding's* readers are *practicing technicians*—chemists, physicists, astronomers, mechanical engineers, electrical engineers, radio men—technicians of every sort.

All *Astounding's* readers, I know, are technically inclined. But there is a difference between the theoretician and the practical man in the field. The one deals in plausibilities; the other in practicabilities. In many ways that understanding of the character of our audience can guide us in choice of material—and in the meaning of *power*. In the coming year, that Research Data is going to show.

I can't give you details; if I knew the details of that next year, they wouldn't be forecasted improvements—I'd act on them to make them accomplishments now. But as to general trends—

First, the stories will be better. Each year they have been; each year they will be. The advance this year will be greater than ever before, however, for never before have we had so many, or such capable writers. During the past year, these new men have entered the field; during the coming year, their work will, inevitably, grow in power. More new men will enter the field. *Astounding* has led all science-fiction in introducing new authors during this year; it will in the coming year.

Second, the art work will be better. One definite step I am working on now. I believe that presently an entirely new man, an entirely new type of artist, will be introduced to science-fiction on *Astounding's* cover. An artist who is, primarily, an industrial man, experienced in the portrayal of today's most powerful machinery, a background that gives him a solid reality on which to build the machines of tomorrow.

Already, *Astounding* has taken the word *garish* from the description vocabulary of its covers. In the year to come, it will add even more of the factor *reality*. It has added that to its stories; the art work that sets the mood and scene for the stories must gain it.

During this year, *Astounding* has proven that its articles can be the highlights of an issue. L. Sprague de Camp's *Language for Time-Travelers*, Dr. E. E. Smith's *Catastrophe*—. There will be more articles as powerful as those.

Each year, *Astounding* has advanced. In this coming year, *Astounding* will make the greatest advance of its career.

The Editor.

MAGICIAN OF

By
RAYMOND Z. GALLUN



Working always in his suit, under the older man's orders, Vickers did all the work on the strange cone-weapon.

DREAM VALLEY

In a haunted, dreaded valley on the Moon, the Hexagon Lights wavered—flickered—. Inexplicable, till a man went to investigate—and was investigated!

JACK VICKERS felt a twinge of dread sweep through him as he reached the top of the pass and looked down into Dream Valley. Cupped in the mountains just beyond the western rim of Mare Imbrium, the Lunar "sea", the valley swarmed with Hexagon Lights, ancient and now vanishing miracles of the Moon. Tenuous as the fabric of an aurora, they winked and throbbed and changed their forms and their gorgeous colors like the ghosts of gigantic snowflakes.

Jack Vickers was a newscast reporter. He'd had some tough assignments during his career, and this one topped them all. Right now he couldn't figure out where all his former eagerness had come from—or gone!

"I want you to get the straight dope about this Magician of Dream Valley," his chief, back on Earth, had told him. "This queer old guy has become quite notorious among the men at Imbrium City. Not one of those men will go near him. His name is Athelstane—Clyde Athelstane, recently connected with the physics department of Columbia U. But now he's reported to be a regular sorcerer who can accomplish things that nobody else can understand. His original purpose in coming to the Moon, it seems, was to study the Hexagon Lights. So go ahead and do your stuff, Jack! The public eats up any info that's out of the usual rut."

Jack Vickers had accepted this order with a song in his heart. For he was young, and this looked like a real opportunity. He'd never been off the Earth before, for one thing.

Cold reality had put his enthusiasm on a less romantic basis. Imbrium City was tough and practical, and full of men of a similar character—except for that Athelstane quirk of theirs. Sweeping around the ugly and eternally threatening squatness of the rocket fuel plant, which was beyond the little settlement itself, were the gray plains of a "sea" which, on the quick-cooling Moon, had never contained water in any mentionable quantity. The aspect of those gently undulating expanses of billion-year-old lava was too awesome now, under the grimly factual stars, for any preconceived idea of romance in connection with them to overbalance their depressing suggestion of eternal death.

However, Jack Vickers had a purpose, and he was not the type who quits easily. Presently, steeped in a new Lunar lore acquired from the talk of hard-bitten old Moon-colonists, he had sallied forth from the settlement.

HIS EQUIPMENT consisted chiefly of a highly developed space armor. The thing was massive. Each foot was a miniature atom-powered tractor. A man within the suit could withdraw his arms from the sleeves of the intricate, versatile thing; and reach the food supplies contained in pockets arranged all around the spacious interior. There were air-purifiers, of course, and water generators. The leg joints of the armor could be locked so that a man could sleep—if he could sleep in an erect position—while the little tractors on his boots carried him on and on.

And so, guided by the eternally glow-

ing stars, young Vickers had started out on his mission, warnings, and even expressions of resentment at what he was attempting, ringing in his ears. The fuel plant, the vast slag heaps, and the atmosphere-dome of the settlement, had sunk rapidly under the horizon behind him. The greenly phosphorescent pall of radioactive waste-vapors ejected from the chimneys of the plant had been the last landmark of the colony to disappear.

Luna solitudes. Occasional Hexagon Lights, mysterious and haunting, dancing like Will-o'-the-Wisps in the distance—— Jack had crossed to the rim of Mare Imbrium. Guiding his tractor boots carefully, he had climbed the rugged mountain pass.

And now he was looking down into the weird, crag-walled pocket that was Dream Valley itself.

Its entire expanse was in view, except where the inky, undiffused shadows masked most of the details of its opposite edge. But into those shadows the Hexagon Lights intruded now and then, quivering over the ash of long-extinct volcanoes, and offering a little varicolored illumination. The jagged, uneroded barriers of the valley brooded moveless and dull gray, giving a suggestion of subtle evil.

Jack swallowed nervously, and his eyes blinked into the dazzling sunshine, as he searched for the sealed dwelling of the man he had come to interview. But nowhere in sight, as far as he could discover, was any man-made building.

"Damn!" Jack cursed softly. "This must be the place! I couldn't have gotten my directions mixed up! Unless those yarns about Athelstane being able to make things vanish and reappear again are true!"

Definitely uneasy, yet a bit disgusted with himself for the unwonted superstitious fear that had come over him, young Vickers stood motionless for a few moments. A host of writhing Hexagon

Lights were gathered there below him, like a mass of phosphorescent vacuum, engrained with a million winking geometric patterns that shone with all the colors of the spectrum. The sunshine gave those Hexagon Lights a kind of rainbow transparency.

Jack Vickers had never before seen a display of the great Lunar miracle that even dimly approached this in magnificence. Once the Hexagon Lights had been common all over the surface of the Moon, but no more. The manufacture of radioactive rocket fuel at Imbrium City was supposed to have something to do with their gradual disappearance.

DREAM VALLEY! Hexagon Lights! Composed only of a soft, auroral luminescence as far as anyone could see, they altered their shapes and colors constantly. Now they were simple, diaphanous planes of a six-sided form. And now they took on all the beauty and geometric complexity of a snowflake expanded to colossal size.

Yet they were, according to accepted scientific opinions, no more than phenomena related to terrestrial auroras, being induced in the minute trace of Lunar atmosphere by incoming electromagnetic waves from the sun. Some odd, natural condition, peculiar to the Moon, was supposed to give them their crystalline shapes by reflecting in some manner, and in enormously magnified size, the forms of minute ice crystals still floating in what little remained of the Lunar shell of air. At least, like ice, and no matter how much they changed in appearance otherwise, they always retained that fundamental hexagonal form.

Jack Vickers suppressed a shudder. The tweaking sense of unease that crawled along his spine made him want to get the distasteful things ahead over and done with as soon as possible. He searched the valley floor again for the dwelling of the Magician. Thus, presently, he spied a low, square structure

which blended well with the general, sombre hue of the ground beneath the diaphanous splendor of the Hexagon Lights.

"Dr. Athelstane's laboratory," he muttered. "I'm almost certain it wasn't there before. Still—it must have been! My eyes must have been tricking me, just as the eyes of those other few men who saw this place were tricked. Even on Earth there are desert mirages. Some parallel, though unrelated phenomenon here, evidently——"

Jack began to climb down the rugged slope toward the bottom of Dream Valley. His armor was massive, but the low Lunar gravity gave it little weight, and his tractor boots, though clumsy, were equipped with sharp lugs that gripped well the pumicelike rock.

Entering the level where the Hexagon Lights swarmed was somehow, dimly, like being immersed in water. There was almost the same sense of being enveloped and covered by a medium which had treacherous possibilities. Almost at once Jack Vickers' head began to ache dully. This was a disquieting symptom which the earlier colonists of the Moon had noticed, and which the present colonists avoided carefully. It was evidently produced by a too-close contact with the Hexagon Lights. The result, perhaps, of an emanation which was thrown off from their ghostly forms.

Tense with nerve strain, Jack hurried as much as he could. Once on the valley floor, he set his tractor boots to top speed. Thus he rushed forward, straight through the myriad shapes of Hexagon Lights, as tenuous as a vacuum, but beautiful as a designer's most fragile vision—beautiful and cold, and apart from anything the newscast man had ever encountered before in his past life.

FEELING somewhat shaken, he reached the entrance of the laboratory

structure. Beside the entrance there was a little push button. Jack pressed it to signal his arrival. Slowly, then, after a brief wait, the external valve of the air lock opened. Jack entered and the valve closed behind him. In another minute, after the compartment had filled with air, he proceeded to remove his space armor, leaving it standing rigid against the wall beside another similar armor.

"Hello, my young friend! I see you are a bit upset by my beauties, by my wonderful star-flowers! But it is only natural! They are strange, so utterly strange! When you become used to them you will love them even as I do! Nevertheless, I am glad you are here—very glad! I need help in my work. During several months I have tried occasionally to get someone to come here to assist me. But no, it was not easy to do! The people at Imbrium City are stupid provincials full of superstition unworthy of our age! You are not like them! I can see that you are not like them! You are educated! Cultured! You will help in the most wonderful research that has ever been attempted!"

The voice rattled on with the almost hysterical garrulity of one suddenly relieved from long solitude. Half startled, Jack Vickers looked at the speaker. He saw not a sombre wizard, but a little, rosy-cheeked benignant man in his middle fifties, who had entered the air-lock compartment through the now-open inner valve.

But still, Jack could not forget that this was the Magician of Dream Valley. The man who, according to vague reports circulated at Imbrium City, had appeared close to the settlement's atmosphere dome on several occasions, and had gone away again—without leaving any permanent tracks in the dust where his tractor boots had trod!

All talk, of course. Yet here in this little air-lock compartment, where metal

gleamed dully, it was easy to fall into the grip of a dim fear that was like dark enchantment. Jack fought the insidious, creeping approach of that fear with all the will power at his command. The memory of the weird Hexagon Lights was still vivid in his mind.

He smiled. "Perhaps I will help you with your investigations, Sir—if you find that I'm qualified," he said guardedly, feeling somehow that in the almost-pleading insistence of the little man there was—in some manner—a trap. "I'm Jack Vickers of Fortune Newscast. You, I take it, are Dr. Clyde Athelstane."

"You've come here specially to see me?" the savant questioned in obvious pleasure.

Jack had made no move to conceal his identity, for he had heard from fairly accurate sources that Athelstane really wanted publicity. So now he proceeded to carry his scheme of flattery through.

"Of course, Sir!" he said. "You must tell me all about your work!"

The scientist beamed. "That is splendid!" he enthused. "Come with me!"

Athelstane led his guest into the comfortable, though compactly arranged living quarters.

"Sit down! Sit down!" he invited.

JACK DROPPED into a big easy chair, his outward calm fairly restored, but an inward turmoil troubling him as much, or more, than ever. His head still ached furiously, and mixed with this physical discomfort was the consciousness of a thousand disquieting and mysterious circumstances that lurked around him. It was quite possible that Athelstane was a madman, wasn't it? Certainly it must be easy for one to lose his mind here cooped up in this tiny building, with the age-old vacuum of the Moon all around! Moveless crags, brooding and sullen. Ancient ash and scoria of long-dead volcanoes. Almost nothing that moved except the Hexagon

Lights. In Athelstane's faded blue eyes there seemed to be weird reflections of Lunar stars. And his whole body, ordinary though his appearance was, appeared to be wrapped in an impalpable aura of the fantastic.

Jack thought of the possibility of being murdered in some bizarre experiment here, and he didn't like the idea at all. But then—perhaps he was only allowing his imagination to run away with him.

Athelstane paced the floor restlessly. "Do you believe in conservation, young man?" he asked. "That is, the conservation of natural things—wild life and so forth?"

"With reservations, yes," Jack responded at once.

"You agree with me then on one point," the scientist responded. "My beauties, my Hexagon Lights, are the greatest natural miracles of the Moon! They must be preserved from the extinction which threatens them. During the time that I have studied them, I have learned much. They are not quite what they are supposed to be. But it is true that they are basically phenomena of the ether, just as are wireless waves, X-rays, cosmic rays, heat and light waves and so forth. The great difference between the Hexagon Lights and the phenomena with which I have compared them lies in the fact that they are much more complexly organized. That is what they are—organisms of the ether, just as we are organisms of matter! Ether has been much misunderstood. It has not been distinguished from an absolute vacuum simply because no absolute vacuum—separate from the ether—has ever been produced by men. Ether is not mere emptiness; it is a medium, more truly comparable to a solid than to a true vacuum. That we do not perceive its material properties is simply because we have not the right organs of sense to do so.

"Thus far, boy, I believe you follow

me. And you know, of course, why the rocket fuel plant, which serves half of the Solar System, was established on the Moon. Manufacturing rocket fuel consists in taking aluminum, extracted from rock, lava, and so forth, and rebuilding its atoms, thus transmuting it into complex, heavy radioactive elements in which is concentrated terrific atomic power. The radiations incident upon such a reconstructive process would be dangerous on Earth, killing vegetation, and producing morbid sores on unprotected men and animals. In addition to this, there is always danger of a fearful atomic explosion. In consequence, Imbrium City was built on the deserted Lunar surface, where the fuel plant would not threaten the dense populace of Earth.

"THUS the Hexagon Lights were brought face to face with the promise of doom. For to them, with the fine balance of etheric forces that is theirs, the radiations of the manufacture of rocket fuel are far more dangerous than they are to humans. Gradually, gradually, they are being destroyed. And if there were to be an explosion at the plant—producing a wave of fearful etheric power, and throwing a thin shell of radioactive gases all around the Moon—they would all be wiped out in a few hours!

"Oh, don't you see, boy? I am a student of all the miracles of the universe! And now, when I find the greatest, the most thrilling miracle of all—it is about to be snuffed out of existence, even before I am given a chance to complete my study of it. This must not happen! I will not let it happen! Never! Never! Never! These rocket fuel people must be driven from the Moon! They can establish another plant on one of the larger asteroids just as well. To drive them away is my first objective. With

your help, Jack Vickers, I can accomplish it quite easily!"

Jack was a little dazed at this stunningly direct statement. With wonder and doubt and half belief growing in his mind, he had listened to all that Athelstane had said, not without a certain sympathy. But he was sure, now, that his host's motives were backed up by reasoning faculties that were a bit blurred, making him the monomaniac champion of a beautiful, outré, and perhaps dangerous, unknown.

"You're being rather drastic, aren't you, Doctor?" he fenced. "After all, the plant at Imbrium City represents an enormous investment, in which hundreds of thousands of people are involved to supply the financial backing. Our first loyalty is theirs, since they are our own kind——"

"Finance! Loyalty!" Athelstane almost shouted. "How do you know that you do not match those stupid words against the very existence of living souls? Yes, I have reason to suspect it! The Hexagon Lights may have intellects even as we! Wait!"

The scientist pushed a heavy curtain away from a window, revealing the expanse of Dream Valley, and the forms of its strange inhabitants.

"Look!" he commanded. "Those geometric patterns, shifting and changing every second, are not the magnified images of microscopic ice crystals, I assure you. What, then, are they? What could they be? The idea signs of a language, perhaps? Or are they more than that? Maybe they constitute a kind of music—a music of light and design! Watch, and you will feel the beat of that music in your thoughts! You will forget the horror—which is only your human response to a wonder out of your experience! Then you will understand the universe more clearly, my friend! Perhaps you will sense, even as I do,

the presence of a life and of a wisdom—call it science, if you will—that is beyond our ken! It may be that you think me a gibbering idiot; but if you relax and let your mind drift as it chooses, without prejudice, presently you will remember that mankind has made many transgressions against nature for the sake of greed which is as poisonous as fear! Trees—beautiful forests swept away to appease the gods of materialism! Think freely, Jack Vickers! Think, and you will know that, even at a great price, removing my star-flowers from the Moon would still be as truly horrible as stripping the eternal blue from the skies of Earth!"

IT COULD NOT have been Athelstane's exhortations alone that swayed the youth. For underneath his veneer of romanticism he was hard and practical. The agent, then, which worked the change in him, must have been something more subtle and treacherous. He sensed that treachery dimly, and tried to fight it. But there was now a vagueness in his aching, throbbing brain that prevented concentration in all but one line of effort. He began dimly to resent the presence of Earthman on the Moon. At least Earthman who had built and were operating a huge, threatening, rocket fuel plant there. What if they were of the same human blood as himself? What matter if they were all killed? They deserved it, didn't they, for their selfish, grasping efforts to dominate a Solar System?

Perhaps Jack Vickers was being mastered by some ultra-hypnotic power which Dr. Athelstane had discovered and had learned to use. Perhaps the presence of those Hexagon Lights—flickering and trembling out there beyond the window in a thousand patterns of living fire—had something to do with the distortion of the newscast man's normal viewpoint.

His face stern, he turned toward the

rosy-cheeked, amiable scientist. "I will help you fulfill your intentions, Dr. Athelstane," he said.

The little student of the Moon beamed joyfully. "Thank you, my friend!" he enthused. "Thank you! And now—shall we start at once? There is a certain device which we must finish constructing. It is more than half completed now. But you must do most of the remaining work. My hands are no longer steady enough. Never fear that you lack skill or knowledge, for I shall be with you always, guiding you, directing you. However, certain circumstances prevent the operations being carried on in this building. We must don space armor and toil out in the open."

Jack Vickers arose from his chair with a swift, mechanical animation. He knew that pain still lanced through his skull; but the presence of that pain seemed to be pushed far away from his conscious attention so that it no longer troubled him. He moved with deliberate, concentrated efficiency, taking no more note of his surroundings than was necessary to accomplish what he must do.

Presently, clad in a space armor once more, Vickers was striding out of the building, carrying a heavy box under his arm. Athelstane, similarly attired, followed him closely, giving sharp, precise orders through the communicator phones that operated by means of a cable which now joined the two space suits.

"Here is a good place. Set the box down. Open it. There are tools and supplies inside. The apparatus is partly assembled——"

Jack went to work. Never had he labored before with such feverish, calm singleness of purpose, setting intricate, though roughly made pieces of crystal and metal together and fastening them into place.

Around him, in the slowly advancing

shadows of afternoon, trembled the Hexagon Lights—glorious, hideous, geometric. But he paid no attention to them at all. He listened only to the commands of Dr. Athelstane, the Magician of Dream Valley, the champion of the unknown.

HE WORKED on and on, even after the dense, black terror of the Lunar night, two weeks in length, had settled down upon him. The lamp attached to the crest of his helmet provided adequate illumination.

He did not sleep until weariness had exhausted him. Then he did so in his space armor, its length sprawled upon the ashy ground. Food was within reach. There would be no need to return to the Athelstane laboratory, building at all.

Sleep periods and periods of toil, with the Hexagon Lights seeming to look on like dancing ghosts, much more brilliant now, in the gloom. A tiny welder torch flaming.

Athelstane did no manual work himself; he only advised and explained and directed, like a guiding genius of this magical, silent place of ruined walls and saw-tooth crags.

It wasn't till the wingtip of the solar corona, first herald of the Lunar dawn, thrust a finger of white light over the horizon, that the wicked apparatus was completed. It was conical in form, plain and crystalline on its exterior, but housing a maze of carefully balanced parts that was a marvel of intricacy. Bizarrely suggestive of another science, there was something as wickedly threatening about it as the gaze of a demon of hell.

"We are ready," said Athelstane, who had long ago shed his benignant air. "Pick up the apparatus. We must go now to Imbrium City."

Vickers felt weak and wasted, but that unholy concentration of energy was still within him, and he obeyed without question. He strapped the conical de-

vice to the small ringbolts at the back of his armor. Then, with Athelstane following him, he started out.

They climbed up the rugged slope, leaving Dream Valley, the haunted, the mysterious, behind them. They moved along the gloomy pass that wound down through the jagged mountains toward the undulating reaches of Mare Imbrium. And all around them, traveling like an escort of ghouls, was a host of Hexagon Lights, their forms changing constantly, their colors shifting from soft rose, through orange, yellow, green and blue, to softest violet, and back again.

Once the two men had reached Mare Imbrium, the going should have been easy and swift. But twelve hours out on its surface, the motor of one of the tractor-boots of Jack's armor suffered a breakdown. It took two Earth-days to make tentative repairs, and after that it was only possible to continue on at half speed.

The journey was dragged out all through that blazing Lunar day, each moment of which seemed to take its toll of weariness and strain. By this time Jack's supply of concentrated rations was exhausted.

The Sun was setting when the phosphorescent green sky-glow over Imbrium City hove into view above the abrupt horizon. It was several hours more before the stupendous slag heaps of the fuel plant loomed like small mountains in the gathering shadows.

BY THEN, Jack Vickers, after a month of unnatural, driving effort, was almost dead on his feet. And Dr. Athelstane seemed to be in an even worse condition. His voice, coming through the connecting phone line, had faded away to a thin thread of insistence and determination.

"Just a little farther we must go for the best and quickest results!" he was saying. "The Hexagon Lights will re-

people the Moon swiftly, once the men are destroyed and the functioning of the plant gradually dies out. Then let human colonists try to rebuild their interests at Imbrium City! The Hexagon Lights had no adequate means of defense before—they had not developed, by a cryptic science of their own, the means to fight their enemies. But now they lack only numbers! Madness is in the emanations of their forms—madness to men! You know that, don't you? You know that they are sentient beings don't you? I have tricked you, my young friend! I have tricked you! On! On——"

Jack had long ago sensed the definitely sinister something which animated Athelstane, but he could do nothing about it now. There was a spell in his brain, his nerves, and his muscles, that was like a surging, unbreakable habit. He could only know now that his vague intimations of something nameless had had grotesque fact hiding behind it. Madness! He must go on and on——

The hovering Hexagon Lights were all but gone now, most of them having retreated from the lethal rays of the fuel plant. But a few, dim and colorless, still hung on grimly, as though they knew that the mission of these two humans was one of salvation for their kind.

Night was near. In the sky the huge, green Earth glowed, a mottled monster.

"Here, my friend!" Athelstane whispered. "Here is close enough! Set the apparatus of vengeance on the ground! Press the control boss!"

And once more Jack moved to obey. But then, from one of the smouldering stacks of the rocket fuel plant, there was a brief, brilliant puff of greenish smoke. Just a trifling irregularity of the functioning of the equipment below. The green halo in the sky brightened.

Jack heard Athelstane give a thin scream: "Quick! Act as I have told

you, you fool! At once! I——"

The tenuous voice faded away.

JACK VICKERS did not respond as he always had before: For a moment he felt dazed and empty, like a marionette when the strings are dropped by its operator. Utter exhaustion gripped him, and he sagged limply within his space suit. The driving force that had held him in thrall was at an end.

Then fear came—the fear of the unknown brought to him by reasoning that was independent at last. And in this compelling emotion there was a new driving force.

Jack forced himself to look around. He was alone. Athelstane, in his bulky armor, had vanished utterly! So had the few, faint Hexagon Lights, as if they had been mysteriously snuffed out!

The newscast man didn't know what to make of it all at first. But the sharp, daggerlike terror that came with his release from a spell gave a keener edge to his wits. He noticed for one thing that the cable of the communicator phone was not dragging behind him as would have been the case had it been broken or disconnected from Athelstane's space armor. Instead—it was neatly coiled at the hip of his suit!

Almost instantly he patched the scattered fragments of evidence together, arriving at an incredible conclusion! A people beyond human dreams, wielding a miraculous science that was all their own! Vickers couldn't be sure as to how it had all been accomplished, but he knew now that he had been tricked in a manner far more subtle than he could have supposed!

His urges centered on a new objective. The Hexagon Lights! Back there in Dream Valley. Everywhere that they might be on the Lunar surface! They must be wiped out swiftly, before any further treachery could emanate from them! Young Vickers thought of the conical apparatus of mystery on his back,

and wondered in what hellish way it was meant to inflict death.

There was only one means that Jack knew of to accomplish his purpose. It was a dangerous, destructive means. But when a threat of such vital significance loomed, you didn't think too much of the price.

He waited until the thick, astral darkness came, just to be more sure that his operations would not be interfered with by members of his own kind. Then he struggled on between the slag heaps. He climbed a stair over a massive wall. He worked a little service air lock that had been left unfastened. He entered the nearest building of the plant.

This was a sleep period, and there was no one about in the great room. But in a colossal, shallow vat a superheated liquid smouldered, giving off glowing radioactive vapors.

Vickers moved purposefully to a switch panel and moved a dial. Exciter rays poured down from a projector, striking the molten contents of the vat with increased force. The viscous, lava-like stuff began to seethe. In approximately fifteen minutes there would be an eruption of atomic force—one whose radioactive rays would penetrate far and wide, whose gases, pouring out similar rays, would envelop the Moon briefly, insuring the complete extinction of the Hexagon Lights in a matter of a few hours.

Nor was there any possibility of preventing the explosion now, with the exciter beams turned to full as they were. In a moment the automatic alarm gongs would be ringing in Imbrium City. The populace would be rushing to underground refuges, shielded and safe.

Vickers hurried out of the building the way he had come, seeking the shelter of a vast pile of slag. The radiations of the eruption might burn him a little here, but he would be safe. Those radiations were not sure death to men as they were to the Hexagon Lights.

Though, in the scope of science, there might exist other waves of the ether that would wipe out human life while scarcely affecting beings like the Hexagon Lights at all—

TWO LUNAR DAYS later—more than two Earth months.

No one had discovered Jack Vickers' part in the disaster at Imbrium City. All evidence of his tampering had been blotted out by the blast. Now, the process of reconstruction was in progress.

But Jack himself was far away—once more in Dream Valley, which was stripped now of its eerie people. The vacuum between the towering, black-shadowed crags was crystal clear with desolation.

Vickers had come back to penetrate the last doors of a grotesque, romantic enigma—the last doors that would ever be open to him or any other man.

Half fearfully he searched for the low, metal dwelling of Dr. Athelstane. But as he had expected, it was nowhere to be found.

There was no evidence of human intrusion here, except for the ageless footprints in the dust, and one prostrate space armor, around which were crude pieces of apparatus. Beyond the armor's face panel of darkened glass, Jack Vickers saw the withered visage of a little man. That man had been a lifeless mummy for a long time, a thing of sunken eyes and shrivelled cheeks.

—“I think I almost understand it all now,” Jack muttered. “The Hexagon Lights really were living entities—entities woven of the imperceptible fabric of the ether!”

“This corpse was the real Athelstane. He came here to study the Hexagon Lights, but—they studied him instead! The waves they created beat upon his brain, and they mastered him almost at once, using a new projection of their strange science! Somehow they must

have learned how to design the apparatus—the cone of death—even though, being so tenuously constituted, they could not fabricate material things themselves. Perhaps the science which enabled them to do this was entirely theoretical. Perhaps they had means of experiment and research both unknown and inconceivable to men.

"They made Athelstane begin construction of the cone. He worked with his own tools, making the needed parts with the aid of makeshift equipment that enabled him to draw the needed substances, metal and so forth, from the soil of the Moon!

"But Athelstane died, worn out, before the job was completed. Then I came here! The laboratory, and the Athelstane I saw and talked to, were both just myths induced in my brain by means of something which must have been a kind of telepathic projection of pictures, sounds, and other sensory impressions. Perhaps this hoax was used to help win my confidence. The Hexagon Lights knew all about Athelstane, and could duplicate his personality easily enough. Certainly, too, though I seemed to remove my space suit on entering the mythical lab, I did not do so at all, but only submitted to suggestion of some kind, and imagined I did!

"Well, I finished the conical device meant to radiate death to every man in

the vicinity of Imbrium City! It was natural that the Hexagon Lights, being creatures of the ether, should employ etheric waves to accomplish their purposes. They lived and worked and died by such vibrations.

"When I approached Imbrium City with the cone, the emanations of the fuel plant became stronger and stronger, driving all but the hardiest of the Hexagon Lights back. Then came that minor flicker from the vapor chimney. The emanations increased in intensity, and those Hexagon Lights near me were destroyed. Of course, the mirage that was Athelstane vanished with the minds that produced it.

"The Magician of Dream Valley! No wonder that vision of a man was called that! No wonder his perfectly tangible, though nonexistent, form left no permanent tracks in the dust! No wonder I did not see the laboratory when I first looked down into Dream Valley! It was not till my arrival was discovered that the vision was produced!

"What a story, if I could spill it all! Lord, what a narrow squeak it was! Those devilish, half-real ghosts of hell! Who knows what they might have done, even on Earth!"

Suddenly, though, Jack Vickers felt somehow a trifle sad. A unique and wonderful people had fought a valiant battle to live, and—had lost.



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FOR GEM AND EVER-READY RAZORS

Hunger Death

by Clifford D. Simak

Iowa farmers on Venus—and the “polka-dot weed”—alone offered a cure for the deadly weapon of an ancient people—the Hunger Death!



Zeke stared at the man who stumbled from the wrecked ship. He was horribly emaciated. "Food," he whimpered. "We're starving—"

OLD Doc Trowbridge was napping in his office, with his feet on the desk and an empty *bocca* bottle on the floor beside him. Angus MacDonald, New Chicago's marshal,

shook him gently. Doc opened one eye and stared at Angus in mild reproach.

"Radium City wants to talk to the health officer," announced Angus. "I guess that's you."

Doc pulled his feet off the desk and slowly rose. He rubbed his eyes and glanced at the marshal's dripping raincoat.

"Still raining," he remarked.

"Hell, it always rains on Venus," said Angus.

Doc stretched his arms over his head and yawned.

"Better hurry along, Doc," urged Angus. "Maybe some of the big doctors over at Radium City want to call you into consultation."

Doc snorted. Once he might have been insulted by so thinly veiled sarcasm. But Doc now was past the possibility of being insulted. Ten years on Venus, a hand-to-mouth existence and rotten liquor had taken their toll.

Doc puffed into his raincoat and followed Angus down the rickety stairs. Rain beat at them as they stepped from the building and sloshed up the red mud slough that was the main street of New Chicago.

At the radio station on the edge of the landing field, the town's only contact with the outside world, they were greeted by Angus' son, Sandy.

"I'll get Radium City for you," said Sandy. "It sounded as if it might be important."

"Nothing important ever happens in New Chicago," Doc grumbled. "Nothing since old Jake Hansler died. And they blamed that on me."

Sandy was speaking into the transmitter. "New Chicago calling Radium City. Answer please. New Chicago calling Radium City. Answer please."

Out of the amplifier came the voice of the Radium City operator. "Radium City answering New Chicago. Have you located Dr. Trowbridge?"

"Just a second," said Sandy.

He switched off the amplifier and handed Doc a set of headphones. Doc clamped them over his ears and lowered his rolypoly body into the operator's chair. He hiccupped slightly and spoke

into the transmitter.

"This Dr. Trowbridge," he said.

"Dr. Trowbridge," said the voice in Radium City, "my name is Tony Paulson. I am a reporter for the Inter-World Press Service. I'm just checking up on this new disease—the Hunger Disease. Have you any cases in New Chicago?"

"Hunger Disease," snapped Doc. "What are you talking about? I never heard of such a disease."

"This is something different," said the voice. "A new disease. It has broken out all over Venus. Quite a few cases on Earth, too. Patient can't seem to get enough to eat. That's why we call it the Hunger Disease."

"Never heard of it," declared Doc.

"Are there any other doctors in New Chicago?" asked the reporter.

"No," said Doc. "I'm the only one and they could get along without me. Practically starving me to death. Never saw a healthier place in all my life."

"You're sure there's nobody sick in New Chicago," persisted the newspaperman.

"Sure I'm sure," protested Doc. "Last time anybody was sick here was when Steve Donagan's kid, Susan, had the measles. And that was three months ago."

"O. K.," said the voice. "Thank you, doctor. Any other news out in New Chicago?"

"Not a damn thing ever happens here," Doc declared.

"O. K.—good-by then, and thanks again."

"Good-by," said Doc, slipping the headphones from his ears.

He heaved himself to his feet.

"That's what comes of being buried in a mud-hole like this," he announced to Angus and Sandy. "Here I am, not knowing a thing about this new disease. Why, once I was regarded as an authority on diagnosis. That was before I came to New Chicago. Fellow in Ra-

dium City says there is a new disease breaking out there. Acute hunger is one symptom. He didn't tell me anything more about it. Never heard anything like that before."

He shook his head dolefully and headed for the door.

"Thanks for calling me," he said and plunged out into the rain.

The marshal and his son saw him waddle rapidly down the street, heading for the Venus Flower saloon.

"He'll tell the boys about this new disease," said Angus, "and they'll buy him drinks. Before night he'll be a disgrace to humanity."

ARTHUR HART, editor of the *Evening Rocket*, tapped his finger against a paragraph in a news story appearing on the front page of the early afternoon edition.

"Something funny here," he told Bob Jackson.

He shook his head. "Mighty funny," he mused.

Bob Jackson said nothing. He scented trouble in the air. Whenever the chief took to shaking his head and muttering to himself it meant trouble for someone. Bob had the feeling he was the victim this time.

"Listen to this," commanded Hart.

He read the paragraph: "The only community on Venus reporting no cases of the Hunger Disease is New Chicago. Dr. Anderson Trowbridge, health officer, told the Inter-World Press Service today there was no sickness of any sort in that city."

"Healthy place," said Bob, wondering if he was saying the right thing.

"Too damn healthy," snapped Hart. "That's what makes it funny. With this Hunger Disease rampant over the whole face of the planet, why does New Chicago escape? People dying like flies everywhere else and the folks in New Chicago not bothered a bit."

Hart fixed the reporter with a steely glare.

"That's where you come in," he announced.

"Listen," Bob bristled, "if you think you're going to pack me off to some God-forsaken trading post on Venus to find out why nobody ever gets sick there, you better start looking for someone to take my place. I was on Venus once and I don't like it. It gives me the creeps. Rains all the time. Never see the sun. Sticky-hot. Why, the rain is even lukewarm. And bugs—man, there's millions of them. All shapes and all sizes. I hate the damn things."

Hart laid down the paper, carefully smoothed it out on his desk.

"Now, Bob," he said softly, "I'm asking you to do this because you are the one man I can depend on. If there's anything to be found in New Chicago, you are the man to find it. And I think there is something to find. Something mighty important."

"Right now the Earth is faced by one of the gravest threats it has known in years. The Hunger Disease. You know what it is. Speeds up metabolism. Speeds it up to a point that a man must eat almost continuously to provide the body with fuel to keep going. And all the time the victim ages visibly. His skin wrinkles, his hair turns gray, his teeth fall out. In only a few days he lives the equivalent of years, and in a week or ten days he dies of what amounts to old age."

Hart's eyes narrowed and his voice was sharper now.

"Our medical authorities haven't a single clue. They haven't been able to isolate the germ or bacteria or whatever it is that causes the disease. They know it is contagious and that just about sums up their knowledge. They don't know what causes it. They don't know how to prevent it or cure it. So far, every single person who has con-

tracted the disease has died—or is going to die."

Hart fixed Jackson with a frigid stare.

"I am offering you a chance," he said, "to do a great service to humanity. There must be some reason New Chicago has not been hit by the disease. If you could find this reason— Don't you see, Bob, it's a chance to save the Earth!"

"It's a chance for the *Evening Rocket* to pull down a billion bucks of gilt-edge promotion," snarled Bob. "Big headlines. Rocket Reporter Finds Cure for Hunger Disease."

Hart sighed.

"There's only one thing that appeals to your sordid soul," he said. "There isn't a fleck of human kindness in you. You have a heart of zero steel. How much does the *Rocket* have to pay you to get you to go out to Venus?"

Bob pondered.

"I hate that place, Hart," he said. "I don't like it at all. There's too many bugs there. Too damn many bugs. Let's say a bonus of—well—of about five thousand."

"All right," snarled Hart. "Now you get out of my sight before I lose control of myself. You get out to Venus just as soon as a space eater can get you there—and so help me Hannah, if you flunk out on this assignment I'll put you on the obituary desk and what's more, by the Lord Harry, I'll see that you stay there."

Outside the door, Bob gave himself a mental kicking.

"You damn fool," he told himself, "you should have made it ten thousand. He'd have paid it just as quick."

II.

ZEKE BROWN sat disconsolately on the hopping block in front of his weather-beaten cabin and watched his neighbor, Luther Bidwell, come down the road.

Luther was a nondescript figure. Clad in blue denim overalls, he bore an unshaven and unwashed look. His ragged hat sagged over a shock of disordered hair, hanging halfway to his shoulders. His gait was a half slouch, half gallop, as if he might be in a hurry, but didn't want anyone to think he was.

Zeke hailed him from a distance.

"Howdy, Luther."

"Howdy, Zeke," Luther called back.

Zeke waited, smoking his pipe, his eyes sweeping the pitiful failure and delusion of his Venusian farm. The fields covered by huge patches of polka-dot weeds, the encroaching jungle, the rustling machinery, the steaming pools of water drowning out the last of his stand of corn. From the jungle came the high-pitched chirping of the dingbats, insects which in their own proper time would come forth to devour whatever might be left in the fields.

Something rustled in a clump of polka-dot weeds near the wood pile and Zeke, turning swiftly, saw a pair of pointed ears and two gleaming eyes staring at him. With a swift motion he whipped out the gun which dangled from the belt at his hip. But before he could clear the weapon the evil face had disappeared.

"Dang you," said Zeke without emphasis, "just stick your head out again. I'll get you."

But the skink was gone. Zeke grumbled and holstered his gun.

Turning his eyes back to the road, he watched Luther continue down the trail, raising little spurts of mud as his feet clopped on the ground. Luther turned in at the sagging gate and took a seat beside Zeke.

"Just saw you pull your gun," he commented. "See something?"

"A skink," said Zeke. "Dang things overrunning the place. Just about cleaned out the chickens. Just a few old hens left now."

"They cleaned me out the other night," Luther said. "Killed every hen on the place and then got into the hog pen. Tackled the hogs, I guess, but them porkers was too much for them. Must of been quite a herd of them at that, for they chawed some of them pigs up right handsome. The hogs killed a couple of them and I ain't been able to go into that hog house since then. They sure carry a powerful scent, them fellers. Worse than the polecats back in Iowa. Hogs don't mind, seems. They ate 'em."

"They give me the creeps," said Zeke. "Almost like human beings running running around on all four legs. Naked, not a single hair on them and meaner than poison. If you get them mad, they'll go around stinking up a place just out of pure orneriness, like they was trying to get even. But I cleared quite a few of them out of this neck of the woods lately."

He patted the gun at his side.

"But you know what I'd like best of all, Luther?" Zeke asked.

"Nope," said Luther.

"I'd like to catch up with that slick land agent. I would sure burn his hide full of fancy holes. He's the feller I'd really like to get in front of this gun. But he's still back on Earth. He knew dang well that after he got us out here on Venus we couldn't ever get back to Earth.

"Remember the things he told us? He talked slick as all get out when he came to our little place back in Iowa. Told us about all the advantages there were on Venus for a progressive farmer. He sure painted a pretty picture. He said there wasn't no winter here and that a feller could grow four or five crops a year. He said there was always plenty of rainfall. He was plumb full of talk about the virgin soil of Venus, how it had never been plowed and was just waiting to grow bumper crops and

make us all rich. And how there'd always be a big market for everything we grew because the farms were right on the edge of New Chicago. Remember how he told us New Chicago was going to be a big city and the folks there would be willing to pay high prices for the stuff we grew?"

"Sure I remember it," said Luther. "He told me the same thing. So me and Ma talked it over and we decided to come out here. After all, we figured Venus had been colonized for over 300 years and was getting pretty civilized. Sounded pretty good to me, I admit. Matter of fact, soil was getting mighty puny back on Earth. Even good old Iowa soil. Just about all the good drained out of it and all cut up by ditches. You can't farm the same land for over five thousand years without taking proper care of it and still expect the crops to grow the way they ought to."

THE SKINK stuck its head out of the clump of weeds beside the wood pile again and Zeke swore sulphurously as it disappeared before he could clear his gun.

"Dang you, I'll get you yet," he shouted, waving the gun. From the wood pile came the sneering chittering of the animal.

Zeke holstered his gun and stuffed his pipe with a fresh load of Venusian tobacco.

"But there was a lot of things that feller didn't tell us, Luther," he said. "He didn't tell us that this planet was full of all sorts of wild animals and birds and that it had reptiles ten times as poisonous as rattlers. And that it had a billion different kinds of bugs, all ornery as hell. He said there was plenty of rainfall—but he didn't tell us there was so much that it would drown out our crops. He didn't say a dang thing about the dingbats that eat up every

green thing in sight when the hunger comes on them and he plumb forgot to mention the elephant-lizards that can tramp down a field of corn quicker than you can blink your eye. He didn't tell us it was so damp all our machinery would rust and not make even good scrap iron."

Luther spat disgustedly and added his words to the indictment.

"And not a word did that slicker tell us of what kind of a city New Chicago was. He told us it was a growing city, which was stretching the truth a dang sight farther than the law allows. A stinking little trading post with just a few stores and saloons and a couple of hell-joints for the hunters and prospectors and traders who come to town once or twice a year. He said there'd be a market for our stuff. Of course, that doesn't matter much, because we ain't had nothing to sell. We been here five years and ain't had a thing to sell all that time. We're lucky if we have eatin' for ourselves.

"Been eating on wild game and jungle fruit and greens ourselves for the past month," said Zeke.

"We got a little flour and some sugar over at our house," offered Luther. "Not much, but be glad to divvy up with you."

Zeke shook his head.

"No," he said. "You keep it. You got young ones and they need it. There's just the old woman and me. We'll get along. We been a pack of fools, Luther, and I lay awake nights trying to figure out what to do about it. But there don't seem no way. We couldn't raise money enough among the whole fifty families of us to buy even one ticket back to Earth. If we could do that, one of us might go back and see if somebody couldn't help us. But I guess we just been a bunch of suckers, that's all."

Luther sighed.

"Wish I was back in Iowa," he said.

III.

"NOPE," rumbled Doc, "I can't tell you a thing about it. Don't even know what this Hunger Disease is, except for what you told me just now. First I ever heard of it was when that newspaperman from Radium City called me up about it."

Doc tilted a bottle of *bocca* and drank. He waved the bottle at Bob.

"Want a snort?" he invited.

Bob shook his head. "Too early in the morning to start drinking," he explained.

"Listen," said Doc, "any time of the day or night is the proper time to drink in New Chicago. Hell, drink is the only excitement we have around this dump. Only fun I ever had since I been here was when old Jake Hansler died. Interesting case. Something he caught on Mars. Bug bit him or something. Wish he had lived longer so I could have studied it better. People blamed me for him dying. Said I was drunk. Wouldn't have made any difference, though, because it was a funny disease."

He helped himself to another long one.

"Jake Hansler," said Bob. "That name sounds familiar. I've heard it somewhere before."

"Sure you have," said Doc. "Dr. Jacob Hansler, the great botanist."

"That's it," said Bob. "I remember that he died on Venus."

"He came here to do some experimental work and to study some of our plant life," Doc rumbled. "Queer old fellow. Folks here didn't like him any too well, because he wouldn't pay much attention to them. But he talked to me. Got to be good friends. He told me a lot about what he was doing, but I can't remember much about it now. He brought a bunch of seeds here that he found on Mars. Found them in the ruins of an old laboratory dating back to the Genzik dynasty. The seeds were all

dried up and most of them wouldn't grow, but some of them did and he nursed them along. Claimed those seeds were thousands of years old. He brought them here, because he figured the soil and climate on Venus were just right for plant life. Said if a plant wouldn't grow on Venus it wouldn't grow anywhere."

"What happened to the plants after Dr. Hansler died?" Bob asked.

Doc snorted.

"You ought to see the damn things now," he said. "They're regular pests. Growing all over town. Just weeds now. One of them is a sort of rose, with big purple blooms. Real pretty flower and the women around town sort of coddle them along for the bouquets. Not that they need much coddling. Then there's another one that's sort of a wild pea. Pretty good eating. Then there's the polka-dot weed. Makes a right good dish of greens. Got spinach beat all hollow."

"Dr. Hansler sounds like an interesting person," said Bob.

"Mighty funny old duck," said Doc, wagging his head. "Had all sorts of funny notions. Obstinate old cuss. Other botanists told him the seeds he got on Mars wouldn't grow. They must of been over 5,000 years old. But he thought they would and he tried them and they did. That's him all over.

"He had another idea, too, that everybody laughed at, but he died believing that it was the truth. It wasn't exactly in his line of work and so he never said a great deal about it. He told me, though. You know about the Genzik dynasty, don't you?"

Bob nodded. "Took a course in Martian history in school," he said.

"Well," said Doc, "you'll remember, then, that the Genzik dynasty was composed of a group of scientists that practically ruled Mars. They must have been old hell-cats for a fact, because the Martians rose up and rebelled against

them and, history tells you, wiped out every last one of them. They destroyed all the laboratories the Genziks had set up and did everything possible to erase any memory of them. As a result there isn't much known about them now."

"Martian history suggests they were only a higher Martian race," said Bob. "I know there's all sorts of myths about them."

"Well, sir," said Doc, "Jake had a myth about them that would knock your hat off. He claims that a few of them escaped the general massacre and fled to the deserts and that their descendants are still there. Got it from desert tribes who claimed to know all about it. And Jake thought the Genziks were Earth people, maybe folks from Atlantis, who had reached Mars thousands of years ago, long before the present Terrestrial race sent a spaceship there."

"That's a new one," said Bob. "Never heard that before. Have you got any of Jake's notes around here? Did he leave any books or anything?"

Doc chuckled. "Looking for a story, I see," he said.

"The chief will sure give me hell if I don't get something on this trip," Bob told him, "and you certainly haven't helped me any with this Hunger Disease business."

DOC FINISHED off the bottle with gusto, then held it up to the light and sighed. "There's one story you could write," said Doc, setting the bottle on the window ledge, along with several others. "A story that should be written. It's about those farmers here. The Venus Land Company brought them out. Knew they couldn't grow a thing, but that didn't stop thoes sharks. Took everything those poor devils had and dumped them in the jungle here. It does beat hell how the new land racket will get the suckers. Venus Land cooked up this farm scheme and sold it to a bunch of poor Iowa farmers. The

worst of it is that the farmers don't even own the land they've built their homes on. Some of them came up to see me about getting their money back. You know how it is—they figure a doctor knows everything, not ever dreaming how damn little some doctors do know. I looked over their contracts. Far as I can see they're airtight. But I found the farmers settled on the wrong tract of land. I asked them how they knew what land they had bought and they told me a company representative staked it out for them. They settled on the east side of town and the land they bought is on the west side."

"Do they know about this?" Bob asked.

Doc shook his head. "No, I didn't tell them," he said. "Don't suppose it makes much difference. Venus Land won't bother them any more. They got all the boys had and the land is worthless anyhow."

Boots clumped on the stairs and in a moment Angus MacDonald loomed in the doorway. "Doc," he said, "Steve Donagan's kid is sick again."

Doc heaved out of his chair.

"If some of the rest of the people in New Chicago were like Susan," he said, "maybe I could gain back some of my self-respect. She's the only one who ever gets sick around here."

"Doc," said Angus and one could sense stark terror in his voice.

"Yes, yes, go on," snapped Doc. Angus swallowed and started over again. "Doc," he said, "Steve thinks she's got that Hunger Disease."

JOHNNY MASON, wire editor, laid a slip of yellow paper on Editor Hart's desk. "A special just out of New Chicago," he explained.

Hart snapped up the paper and read: "NEW CHICAGO, VENUS—THE HUNGER DISEASE, TO WHICH IT WAS BELIEVED THIS REMOTE TRADING POST WAS IM-

MUNE, STRUCK HERE TODAY. THE VICTIM IS SUSAN DONAGAN, NINE-YEAR-OLD DAUGHTER OF MR. AND MRS. STEPHEN DONAGAN.

DR. ANDERSON TROWBRIDGE, THE TOWN'S ONLY DOCTOR, A FRIEND OF THE FAMILY WHO BROUGHT SUSAN INTO THE WORLD AND HAS ATTENDED HER THROUGH A LONG SERIES OF CHILDHOOD DISEASES, SAID THAT——"

Hart flung the paper down on the desk.

"Johnny," he said, "right now, you're looking at the biggest damn fool in the newspaper business. I got a hunch and sent Bob out there after a big story. He isn't there more than ten hours and the story is all shot to hell."

ZEKE BROWN and his wife, Mary, sat on the doorstep of their cabin and gazed out over their farm.

Night was closing down over the land and in the jungle night-things were awakening. Howls, roars, bellows and yelps mingled to make the night hideous. Zeke shivered as he listened and his hand crept to the butt of his gun. For five years he had heard this nightly chorus of hate and murder, but it always brought tremors of terror with each coming of darkness.

"We'd ought to have some 'taters pretty soon, Mary," he said, striving to keep a tremble out of his voice. "I was looking at them today. Planted them in that sandy patch and the water drained off pretty good. They'll taste fine."

He heard soft sobs and saw that his wife was weeping.

"What's the matter, Mary?" he asked. "Dog-gone, what are you crying for?"

"It's the chickens, Zeke," she told him. "I set such stock by them hens of mine. And now they're all gone. We won't

have no more eggs."

Zeke cursed.

"Next time I see a skink," he said, "I'm going to catch him alive and dunk him into one of them acid pools over there by the river."

Roughly he patted his wife's shoulder.

"I'll sure fix them for what they done to our chickens," he said.

A thrumming roar sounded over the horizon and Zeke looked up quickly. The roar became louder and louder. With tubes red-hot, a flier swept over the edge of the jungle, dipped toward the ground with forward rockets blasting.

Zeke leaped to his feet, waving his arms, cursing.

"Keep out of my 'tater patch, damn you!" he screamed. "I'll sure for certain take the hide off you if you bust up my 'tater patch."

The ship plunged downward, too fast for a safe landing. Its nose struck the potato patch, ripping into the soft soil, throwing it aside in great furrows like the mold-board of a giant plow.

"Now you done it, damn it, now you done it," shrieked Zeke. "You ruined my 'tater crop!"

He raced swiftly through the waist-high patches of polka-dot weeds that lay between the cabin and the potato patch.

The ship's nose was buried deep in the cushioning earth, but it did not appear to be damaged. As Zeke approached, the cabin door opened and a man staggered out.

At the sight of Zeke he cried out, a piteous, animallike cry.

"Food, for the love of Heaven—food!" he cried. "I'm starving!"

In the light which flooded from the cabin door Zeke saw the man's face and his anger turned swiftly to pity. He saw an old man, his form emaciated, his face pinched, eyes staring out of deep hollows, his cheeks sunken—a living skeleton.

The man took a step forward, staggered and fell. Zeke scooped him up

and galloped for the house.

"Mary," he yelled. "Get some food. This man is nearly starved."

A voice sounded out of the gloom. It was Luther, on his way over to spend a few hours with his friend.

"What's the matter, Zeke?"

"Plane crashed," Zeke yelled. "Better run to town and get Doc. There's some other fellers in there. They look bad hurt."

"Be back in a minute with Doc if he's sober," Luther yelled back.

Zeke heard his feet pounding rapidly down the road.

"Zeke," Mary's voice was on the verge of despair, "I ain't got nothing but a mess of greens. That ain't fitten food for a sick man."

"It's better than nothing," said Zeke. "Give me a dish of it. This feller's starved, I tell you."

IV.

"ABOUT ALL you can say for New Chicago is that nobody bothers you much here," Doc told Bob. "Right good place for a man to hide out if he's got something he don't want known."

"Take the feller who runs the Venus Flower saloon. He was a big racketeer back in Old Chicago on Earth. Came here three or four years ago. Then Angus MacDonald, you seen him this afternoon. His real name isn't Angus MacDonald. Folks say he was one of the pirates that raised so much hell on the Earth-Mars run years ago. Then there's old Hank Smith. Nice old feller. But he's the head of a utility company that went haywire back on Earth. Lots of investors would like to get their fingers on him."

"How about yourself, Doc?" asked Bob. "No skeletons rattling around in your closet, is there?"

"Hell, no," said Doc. "I was just a damn fool who came out here to grow up with the country."

Doc patted the bottle that stood on the desk.

"You certainly are a proper judge of liquor," he said. "First time I had anything like this for years."

He tilted the bottle and it gurgled pleasantly.

A rattle of footsteps sounded on the stairs.

Luther Bidwell stormed into the room. "Doc," he shouted, "a plane just crashed out in Zeke Brown's potato patch. Some of the fellers are in bad shape."

Doc reached for his raincoat. "Business picking up today," he commented. "Two calls in a few hours."

He slipped the bottle into his coat pocket.

With Luther in the lead, the three men raced down the stairs and out into the street. The weather had cleared to some extent, but the street was one vast mud-hole.

Running, they took the road to Zeke's house, a little over a mile distant.

Zeke greeted them at the doorway. "Hated to bother you, Doc," he said, "but didn't know how bad it was. Starving man and four dead men in the plane. Looks like they died from starvation. Old men, white hair and every one of them just skin and bones. The feller I brought here was pretty bad off when I picked him up, but Mary fed him up and he seems all right now."

"Starving," asked Doc. "Do you mean they look like they died because of lack of food?"

"Sure do," Zeke affirmed.

Bob shoved the farmer to one side and ducked into the cabin. He made out the figure of a man lying on the bed. With one stride he was across the room and bending over the man.

"Were you the man in the plane?" he asked.

"Yes, I was," the flier replied. "This farmer tells me all the others died."

"Did you have the Hunger Disease?"

demanded Bob.

"I guess so," the man answered weakly. "We were at a post on the Pearl River. Heard about it over the radio and figured we were lucky to be out of touch with everyone. Thought we were safe. But it hit us day before yesterday. We started for Radium City, thinking we might find help there."

"How do you feel now?" asked Bob.

The man ran a skeletonlike hand over his stomach, pressed and punched his midriff.

"Pain's all gone," he announced. "Feel fine. Not hungry any more. First time I haven't been hungry for two days. Before this it didn't matter how much I ate, I was always hungry."

"Did you eat much here?"

"No, just a dish of greens of some sort. Seemed to fill me up right away and gave me a lot of strength. Still pretty weak, but I feel different. Feel like myself again. Not sick any longer. Feel like I'm going to get well."

BOB ROSE and turned around. "Zeke," he asked, "what did you feed this man?"

Mary Brown answered the question. "All I had was some greens. I was so ashamed, but Zeke said they was better than nothing."

"Mrs. Brown," asked Bob, "what were those greens made out of?"

"Why," she said, "polka-dot weeds. They make fine greens."

"Doc," Bob shouted.

Doc waddled across the room.

"Listen to me," said Bob, taking hold of the slack at the throat of Doc's raincoat. "Does everyone in New Chicago eat greens made out of the polka-dot weed?"

Doc squirmed. "Why, I guess so," he said. "Everybody likes it. Me, I eat all I can get of them."

"Does Susan Donagan eat it? Does she like it?"

"No," said Doc, "come to think of it,

she doesn't. Doesn't like anything green. Her mother frets a lot because she won't touch spinach."

"Doc," said Bob, "listen to me and do what I tell you. Try to get that old alcohol-fogged brain of yours to working. You get down to Donagan's as fast as you can. Feed Susan polka-dot greens. Hold her and cram them down her throat if you have to. And then watch. If she gets well, I'll make you famous. I'll write your name in 72 point type and put your mug on every front page in the System."

Doc cracked his fist in the palm of his hand.

"I see what you are getting at, Bob," he shouted.

Quickly he spun about and made for the door.

Bob shouted after him. "Remember, Doc, keep sober. You'll need all the sense you have."

"Sure will," said Doc.

Half a mile down the road he took the bottle from his pocket and flipped it into the underbrush. A few quick steps and he turned back. On hands and knees he fumbled beside the road. His questing hand touched something smooth. He lifted the bottle, pulled the cork with his teeth. The liquor gurgled down his throat.

On the road again, trudging toward town, Doc wiped his mouth with his coat sleeve.

"It wasn't like it was just plain rot-gut," he told himself. "Been all right to throw that kind of stuff away. But it would have been downright sinful to waste good Scotch."

ARTHUR HART paced the floor of his office.

Hap Folsworth, sports editor, sat with his feet on Hart's desk and smoked a Venus-weed cigar.

"What in hell do you suppose Bob's run into out there?" Hart demanded of

Hap. "He sends me word to wait for a real story. No hint of what it is. Nothing to go on."

"He's sitting down in a Venusian saloon laughing up his sleeve at you," said Hap. "He's getting even with you for sending him out there."

Hart smoothed out the piece of paper that had come over the interworld telephone three hours before.

It read:

HOLD PRESSES READY FOR EXTRA. HAVE MOST IMPORTANT IMPORTANT IMPORTANT STORY. CAN'T BE SURE YET. WILL KNOW IN FOUR HOURS, MAYBE LESS. BOB.

Hart raged.

"Here I've held a secret wave length open for him ever since the last edition. The theatres will be closed pretty soon and we'll lose all our street sales. If he's running a sandy on me I'll bust him wide open when he gets back."

A boy stuck his head in the door. "Receiving signal on the New Chicago machine," he shouted.

Hart spun about and raced after the boy. In his wake lumbered the sports editor. The city room was tense with excitement.

"Receiving signal just came over," said Johnny Mason. "Ought to be along anytime now."

The machine chattered and chattered, but the keys still remained motionless.

Then the machine lurched to a start.

Methodically the keys tapped out:

THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG'S BACK. THE QUICK BROWN FOX JUMPED—

"A test," said Johnny. "The operator at New Chicago is running a test."

Then the machine stood motionless for a moment.

"Get going," yelled Hart, pounding the machine cover with a clenched fist.

Again the keys moved, slowly, mad-



Old Zeke's words came slowly, a danger warning plain for anyone to see. "If you Land Company polecats think you're horning in on me now—you're mistaken."

denyingly methodical—

NEW CHICAGO, VENUS—DR. ANDERSON TROWBRIDGE, HEALTH OFFICER AND ONLY PHYSICIAN IN THIS TINY TRADING POST, ANNOUNCED TODAY HE HAD DISCOVERED A CURE FOR THE HUNGER DISEASE. THE CURE IS OBTAINED FROM AN HERB, KNOWN LOCALLY AS THE POLKA-DOT WEED. AN ANCIENT PLANT FROM THE PLANET MARS, BROUGHT HERE SIX YEARS AGO BY DR. JACOB HANSLER, WHO FOUND THE

SEEDS IN A RUINED LABORATORY DATING BACK TO THE GENZIK DYNASTY, THE POLKA-DOT WEED IS—

Hart rushed from the tiny cubbyhole housing the machine.

"Herb," he shouted to his assistant editor, "get pictures of Dr. Jacob Hansler. Pictures of Bob Jackson. Pictures of Dr. Anderson, Trowbridge—"

"Who in hell," asked Herb, "is Dr. Anderson Trowbridge?"

"How in hell should I know?" roared Hart. "Phone the International Medical Society. They'll tell you. But get



roll in half an hour."

He turned to Hap Folsworth.

"We'll have them fighting to get this one," he exulted. "We'll get out the biggest damn extra and score the biggest scoop this city has ever seen."

V.

BOB JACKSON sat on a log with Zeke Brown in front of Zeke's cabin.

"Zeke," said Bob, "you'll have to realize that you and all the rest of the farmers here are rich. You're just plain filthy rich. You couldn't grow corn and you couldn't keep chickens—but all the time you were growing the polka-dot weed. And for that you can ask your own price. This is the only place in the universe today where the polka-dot weed can be obtained. Even now ships are on their way from Earth and from Radium City to get a supply. And you boys can ask whatever you please."

pictures! He's the biggest news in ten years. Write headlines a foot high and three shades blacker than night. We

Zeke pushed back his hat and scratched his head.

"Well, you see," he said, "it's this way. Me and the rest of the boys ain't hankering to hold nobody up. We understand that other people need this weed dang bad and that we can ask our own price. But all we want is a fair price. The past five years have been mighty hard years and we ought to make something out of it, but we ain't aiming to profiteer on the misery of other folks."

"Sure, I know about that," said Bob. "But you fellows don't want to be damn fools. This is your big chance. Here's a chance to cash in on your five years and get paid well for every hour of them."

Zeke shuffled to his feet.

"Somebody coming up road," he announced. "Heard a ship come in awhile ago. Maybe it's somebody wanting the weed."

"They haven't had time to get here yet," Bob pointed out.

Angus MacDonald led the party that plodded up the road through the everlasting red mud. There were five of them.

They halted outside the gate and Angus stepped forward.

"Zeke," he said, "I got a paper to serve on you. Don't like to do this, but it's my duty."

"Paper?" asked Zeke.

"Yes, a paper." Angus reached into his inside coat pocket and drew forth a sheaf of documents.

"One of these for you," he announced, thumbing through them.

"What's the paper for?" asked Zeke, suspicion creeping into his voice.

"Claims you don't own this land," replied Angus. "Must be some mistake. You boys been living here for a good many years now. Seems if you didn't own it, you could have found out before this."

Cold anger dripped from Zeke's words.

"Who claims they own it? If we don't own it, who does own it?"

"The Venus Land Company says they own it," declared Angus. "I sure hate to do this, Zeke."

Zeke looked past Angus, to the other four who stood behind him.

"I suppose you snakes are the representatives for the Venus Land Company," he stated bluntly.

One of the four stepped forward. "You're right," he said, "we are. And if I were you I wouldn't try to start anything. We know how to handle smart guys when they try to make trouble."

Bob saw that Zeke's thumbs were hitched over his gun belt, his fingers poised over the butt of the flame at his hip.

And in that moment, Zeke was no longer a farmer dressed in dirty overalls and ragged shirt. He was something else, something that thrilled a man to see—a man ready to fight for his land.

Zeke's words came slowly, unlike his usual drawl—and each was a danger warning, plain for all to see.

"If any of you polecats think you're horning in on me now," he said, "you are mistaken. And that goes for the rest of us around here, too. If you try to get rough, we'll just naturally strew your guts all over a forty-acre pasture."

"DON'T TALK to me about the due process of law," roared Arthur Hart. "Babble like that might impress some folks, but it leaves me cold. What I want to know is are you going to stand by and let a set of racketeers like Venus Land rob a bunch of poor Iowa farmers a second time——? Yes, I know that's libelous, but it isn't on paper and you can't prove a thing. And let me tell you, mister, if you don't act damn soon I'll give you something you can bring

a libel suit for. I'll fix it so that you won't get one single cock-eyed vote for any public office again. Before I get through with you you'll think you've been hit by a windmill. I got three or four stories filed away that the public will fight to read. The Universal Power Trust case, just for one example. I'll tell the people just what sort of a grafting old buzzard you are—and what's more I'll make it stick."

The face in the visi-plate was purple with rage, but Interplanetary Chief Justice Elmer Phillips knew when he was beaten.

"Mr. Hart," he said, "I don't like your attitude. I deny every insinuation you have made. But I do see some merit in what you propose. I will do it."

"You're damn right you'll do it," snarled Hart, "and what's more, you'll do it right away. If you don't give me a story saying that you have issued an injunction stopping Venus Land or anyone else from monkeying around with the polka-dot weed farms by the time we put our last edition to bed, I'll have another story in its place that will blast you and your Interplanetary Justice commission right out of the water."

"You can rest assured I will do it," Justice Phillips told him. "I'm a man of my word."

"And so am I," said Hart.

The editor thrust the visa-phone receiver back in its cradle and swung around in his chair.

Hap Folsworth chased his cigar from one corner of his mouth to the other.

"I'll say this for you," he remarked, "when you get your tail up you don't let a little thing like blackmail stop you."

"That wasn't blackmail," Hart snapped. "The Justice and I understand one another. He knows well enough I could rip him wide open for some of the stunts the justice commission has pulled and he's ready to play ball. That's all."

Hart's collar was open, his necktie was twisted under one ear, his hair was rumpled.

"You look like you been in a street fight," Hap observed.

"Listen, Hap," said Hart, "I am in a fight. I'm fighting red tape and governmental stupidity and bureaucratic inefficiency. Fighting for the rights of some poor, simple-minded farmers who let a racketeering land company sell them worthless land on Venus. And now that the land has something on it that is valuable the land company wants to take it away from them again. I'm going to have the government declared the polka-dot weed a public utility and take control of it. That will keep out the rats and the slickers and will insure a fair price."

Hap changed his cigar to the other corner of his mouth.

"You've still got ideals, Hart," he mocked. "Ideals after 18 years in a newspaper office. That's something."

"Look here," snarled Hart, "you get back to your silly prize fights and your asinine baseball games and leave me alone. I got a man's job to do."

Johnny Mason, a sheet of yellow paper gripped in his hand, stuck his head in the door.

"Got a load of bad news," he said. "Funny news."

"What is it?" asked Hart.

Johnny laid the paper in front of him.

"Three ships took off from Radium City for New Chicago," Johnny said, "to get a shipment of polka-dot weed. They've disappeared. No radio contact. No reports. Nothing."

Hart hummed under his breath. "Something funny here," he said.

"And that's not all," Johnny told him. "The freighter that was sent out from New York to Venus for the weed is coming back. Got out just beyond the orbit of the moon and blew three tubes. Improper fuel mixture."

BOB FOUND Doc at a table in the Venus Flower saloon. "How's Susan?" Bob asked.

"Getting along all right," said Doc dolefully. "She'll be up and around in a few days."

Doc fondled his bottle, gazed mournfully at it and shoved it across the table to the reporter. Bob tilted it and the living fire of Martian *bocca* slashed down his throat. He set the bottle back on the table and coughed.

"Bob," said Doc, "I feel lower than a snake's belly. I have been sitting off to one side talking to myself and I am downright astounded at what I found out."

"That's a fine way for the man who discovered a cure for the Hunger Disease to be talking," Bob remarked.

"That's just it," explained Doc. "You see, I didn't discover that cure. I would never have guessed it in a hundred years. But you told the people I was the one who did it. And now the International Medical Society wants me to come to New York and be the guest of honor at a big banquet. They are going to decorate me. Just talked to the Society president over the radio."

"That's fine," said Bob.

Doc shook his head.

"It isn't fine," he protested. "Long as I am out here, buried in this mud-hole, I'm a world hero because you've made me one. But it won't take those doctors in New York five minutes to find I am a phony. I am just an old booze-hound. I haven't got too much brain left any more. Liked liquor too well. About all I'm fit to be is a doctor out here. I can patch up a busted leg and I can pull an aching tooth and I can doctor colds, but that's about all I'm good for any more."

"You're drunk," Bob accused. "You'll feel differently when you sober up. I made you a hero and I'm going to keep you a hero if I kill you doing it."

"Maybe you're right," Doc mumbled.

"Anyhow, I'm not looking forward to that trip to New York."

In silence they sat and watched the rain pour down, making a river of the street.

"How's everything out at the farms?" Doc asked.

"Still peaceful," Bob said. "I hope I can keep it that way until Hart gets the court to issue that injunction. There were about a dozen Venus Land men came over from Radium City in the ship. When Zeke showed some fight and Angus refused to serve any more papers, the ones who went out with Angus went back to the ship for reinforcements. Then the whole mob went back to Zeke's place and found it deserted. Zeke and his wife had skinned out to warn their friends. So the Venus Land bunch moved in, figuring, I suppose, that they should establish some sort of possession rights. Zeke roused up his boys and that place is an armed camp. They have every path guarded and a ring thrown around Zeke's cabin. They're hoping the Venus Land boys make just one false move, so they can have an excuse to start shooting. But I got Zeke to promise he'd keep peaceable as long as possible."

"If something don't happen pretty soon," said Doc, "we'll have a posse from town going out there. Nobody around here has much love for Venus Land."

"All we can do is wait," Bob said. "Hart will move heaven and hell to get that injunction through. Those ships that were sent out to get the weed should be here pretty soon. Should have been here before now, in fact."

VI.

"WHAT'S THAT?" Mart yelled into the phone. "I know what you have to say is important, but wait just a second. Get your breath. Talk slowly, so I can understand you."

In the visi-plate Hart saw the reporter gulp and draw in a deep breath.

"It's like this," the reporter said, talking slowly, with clipped precise speech, as if he had applied an actual physical brake to his tongue. "The boys down here at Interplanetary Police headquarters have been working for the past several months on a tip some big plot was underway, aimed against the system government.

"That plot broke today when the police captured one of the men in the ring. They did some persuading and he talked. He said that the gang he was working with was responsible for the Hunger Disease. They had spread the bacteria that caused it all over both Venus and Earth. They had planned to spread it on Mars, too."

"Edwards," snarled Hart, "are you sure you got the right dope?"

"You bet I am," said the reporter. "The chief down here just released the story."

"Herb," Hart roared to his assistant, "get on the extension and listen to this."

"Now," he said to the reporter, "go ahead."

"It's a screwy story, but it's the straight dope," the reporter cautioned.

"I don't give a damni how screwy it is," yelled Hart. "If it's news we print it."

"The police didn't give us the name of this fellow who confessed, but I saw him. He is a big man, a good deal larger than the average man, and his skin is a deep tan, almost black, as if he had been out in the sun a lot."

"Say," said Hart, "are you going to tell us what happened or are you going to spend the afternoon just blabbering around? I want facts and the quicker I get them the better it will be for you." "All right," said Edwards, "here they are."

"The man the police rounded up told them that he was not really a Terrestrial. Said he came from Mars and

was the member of some secret organization. I got that spelled out. Had the chief spell for me. G-e-n-z-i-k. Genzik. At one time he claimed his people ruled Mars. That was thousands of years ago. But the Martians rose up and ousted them, chased them out. Since then the tribe or whatever it is has been living out in the desert."

"Edwards," snarled Hart, "that's all a matter of history. There was a Genzik dynasty on Mars thousands of years ago."

"Oh, so that's it," said Edwards. "I couldn't figure out that part of the story very well. Anyhow, this fellow told the police that for years and years the Genziks have planned to take over the three worlds of Mars, Earth and Venus. There weren't enough of them to do any real fighting, so they developed this Hunger Disease bacteria. Seems that it was the bacteria of a disease that at one time almost wiped out all of Mars' population. They sent their men all over Venus and Mars and spread the bacteria where it would do the most good. The police have sent out warnings to all police stations all over and they are trying to round up the rest of the gang. Far as I could make out, there are several thousand Genziks loose on Venus and Earth."

"SAY," snapped Hart, "did the chief tell you that the Genziks were responsible for the disappearance of the three ships that left Radium city?"

"Yes," said Edwards, "I was just getting around to that. And he said they were responsible for the wrecking of the Earth freighter that started out for Venus to get this polka-dot weed. You see, they knew about the polka-dot weed. That was what saved Mars when the Hunger Disease threatened to wipe it out years ago. But they didn't know there was any polka-dot weed growing any more until they read the New Chicago story in the papers late last night."

This fellow claimed that after the Genziks were chased out by the Martians there wasn't much science or knowledge left on Mars. The Genziks, he said, were the intellectual boys on that planet and had done a lot to help the Martians and that's what made them so mad when the Martians turned against them. He said that the Genziks came from Earth a long time ago, thousands of years ago. From some place like Atlantic——"

"Atlantis?" asked Hart.

"Yeah, that's it," said Edwards, joyfully.

"Listen," said Hart, "do you mean to tell me you don't even know the old story of Atlantis? You don't know enough Martian history to know who the Genziks were. You thought they were some kind of a gang. You figured maybe this was a big story, but you haven't got any idea how damn big it is. Now, I want you to go back to police headquarters and try not to act too damn dumb. I'll be sending some of the other boys down and when they get there you come back here. I'm going to try you out as a copy boy and if you don't make good there, I'm going to bounce you right out on your ear."

Hart slammed up the phone and switched around to face his assistant.

"You got that, Herb?" he asked, tensely.

Herb nodded.

"All right then," said Hart, "get to work. Send one of the photographers down to try to get a shot of this bird the police caught. Send somebody down to replace Edwards. He's too dumb to breathe. Have someone look up the history of the old Genziks and write a feature yarn. Use the revenge angle. Those boys have been hiding out somewhere up on Mars for centuries, frothing at the mouth and planning revenge ever since they were turned out by the Martians. Play up the Atlantis angle. Somebody once advanced the theory that the Genziks were either from Atlantis

or Mu. Said they had built spaceships when our forefathers were still swinging around in trees and went out to Mars to establish the dynasty. Can't remember who it was—but whoever it was got laughed at plenty."

"I know who it was," said Herb quietly. "It was our old friend, Dr. Jacob Hansler. Everybody thought he was teched in the head."

Hart smote the desk with his fist.

"Herb," he said, "that's the angle. Old Jake again. Go to town on that story. It ties right up with the polka-dot weed yarn—how Jake found it and everything."

The editor switched back to his desk.

"I'm going to call the IP chief and find out if he's taking any measures to protect New Chicago. Hell's liable to pop there any minute. The Genziks will try to destroy the weed fields or I'm a dirty space-rat."

But as he lifted the receiver the buzzer rang softly.

Snapping on the visi-plate connection, Hart saw the face of Justice Phillips.

"Oh, it's you," he said.

"Yes, Mr. Hart," said the Justice. "I'm just calling you to tell you that I acted as you suggested. The New Chicago authorities already have been notified of the injunction and instructed to act accordingly."

VII.

ANGUS MACDONALD hitched up his trousers and shifted his chew to the other side of his mouth. "In all my years as marshal of this town," he announced, "I never enjoyed anything like I'm going to enjoy this job. I sure am going to have a lot of fun kicking those Venus Land babies out of Zeke's place."

He doubled up one powerful fist and looked at it admiringly.

"I sure hope they resist," he remarked wistfully.

He stuffed into his pocket the yellow slip of paper on which his instructions

from the Radium City court were typed.

"Going with me, Bob?" he asked.

"No," said Bob, "I'm going to stay here and wait for the police ships from Radium City. They ought to be here any minute now. From what Hart told me just now we're sitting right on top of a keg of dynol and I'll feel a lot safer when the police get here."

"You want to go, Doc?" asked Angus.

"Nope," said Doc. "This has been an exciting day and I feel all tuckered out. But I'm a happy man. This news about the Genziks has justified my faith in old Jake. They laughed at him back on Earth when he said the Genziks were the old Atlanteans. And now it sure looks like they were."

"All right, then," said Angus. "But you boys are missing a lot of fun."

Plodding through the ankle-deep red mud Angus started down the road.

"Still a regular old war-horse," observed Doc. "From what I have heard he sure was an old hell-hound in his day. He damn near stopped all traffic between Mars and Earth thirty years ago. Had the whole Interplanetary Police force on his trail at times. But he had a good ship and he always showed them a clean pair of heels. Old-timers claim he could make a spaceship turn on a dime."

"Let's go back to the station," suggested Bob. "You and Sandy can finish that game of checkers while we're waiting for the police ships."

"O. K.," said Doc.

From far up the road came a hail from Angus.

"Ship coming in," he yelled.

They stood stock-still, waiting. From the east, faintly, they heard the roar of rocket tubes.

"Right close down," Angus yelled to them.

Again came the blasting of the tubes, nearer this time.

"That isn't any police ship," said Bob.

"And it isn't a transport, either," declared Doc.

The tubes roared again, and over the eastern horizon the watchers saw the reddish glare of the explosion through the blanketing clouds.

Then the blast seemed to be almost over them and, far up, dimmed by the heavy cloud layer, they saw the angry belching of the rockets.

The ship circled to the west, turned back, stabbing away with short blasts.

"They're coming in," said Bob.

The ship dropped down, heading for the landing field. It was a beautiful ship, gleaming, silvery even in the dimness of approaching twilight.

"Never saw one like that before," said Doc.

Only a few hundred feet up it rushed over the town, swung in for the field.

Suddenly a tongue of red flame leaped out from the bow of the ship, a flame that smashed against the radio station and wiped it out in a furnace blast of terrific heat.

A scorching wave of heat swept over Bob and Doc, heat that stifled them, seemed to sear their eyeballs. As if someone had suddenly opened the door of a white-hot fire box.

The ship swooped over the field, swung in a wide arc, heading back toward the town.

"Run," Bob shouted to Doc. "Into the jungle! It's the Genziks! They're going to blast the town!"

BUT DOC did not run. Instead he caught Bob by the sleeve and pointed out on the field.

"Look at Angus," he shouted. "What's the damn fool up to now?"

Angus was running across the field, jerking out his flame pistol as he ran, straight toward the Venus Land ship.

"My Lord," breathed Bob. "He's going to fight them singlehanded."

"Angus," shouted Doc, "come back here. You can't do that. You haven't

a chance. That ship's not armed."

But Angus apparently did not hear.

They saw him reach the ship and blast the door lock with a single shot from the pistol. With bare hands he wrenched the red-hot door open and disappeared within the ship.

"The old fool's crazy mad," said Doc. "Sandy was in the station and he's dead now. Angus thought the world of that boy. Had a right to."

The Genzik ship was coming back, bearing down on the town. It swept over the landing field and once again from its bow reached out the tongue of flame. A building went up in a puff of flashing fire. Another and another. As the ship zoomed up it left behind it a line of death and destruction, the entire east side of the street burned to the ground, a blackened ruin, with a few steel girders still glowing.

The street was alive with screaming humanity. Running, terrified human beings, some seeking shelter in the jungle, others running aimlessly, a few standing as if paralyzed, gazing up into the clouds.

From the landing field came a roar and the Venus Land ship shot upward with terrific speed to disappear in the heavy clouds.

The Genzik ship was circling, blasting away with short explosions, jockeying into position to strike at the row of buildings on the west side of the street.

"Maybe we better take to the jungle," suggested Doc.

Bob nodded. "There won't be much left of New Chicago after those fellows get through," he said. "They'll blast the town and then they'll sweep the farms. They'll turn this one little section into a desert. After they are through there won't be any polka-dot weed or anything else left."

"Angus is up there," said Doc.

"But he won't be able to do a thing. He has nothing to fight with," protested Bob.

The Genzik ship was headed back toward the town. Through the clouds the two in the road could see its silvery bulk.

Swiftly Doc and Bob sprinted toward the jungle, but at its edge they halted and looked back as a series of deafening explosions seemed to shake the ground beneath their feet.

The Genzik ship was nearing the edge of the town, but above it, bearing down upon it, with tubes wide open, came a black ship—the Venus Land ship guided by the hand of an old dare-devil of space, a man old-timers said could turn a spaceship on a dime.

Like a flaming meteor the black ship speared downward, the world a-tremble with the roaring of its tubes.

Then the rocket blast was drowned out as the sky was lighted with a mushrooming blaze of white light and the very jungle rocked to the detonations of a violent explosion.

For a split second Bob saw the two ships locked together, surrounded by a corona of eye-searing blue-white flame as the fuel tanks exploded at the impact.

Trailing a column of fire, the ships dropped like a plummet and thudded into the jungle.

"By Heaven," said Doc, "he did it. And he died the way he always wanted to, with his hands on space controls.

"YOU KNOW," said Doc, "I've regained my confidence. I'm not going to let any of those high-powered New York medics high-hat me. I got what I'm going to say all figured out. I am going to say, 'Gentlemen: I am very pleased to be here——'"

"Sure," said Bob, "you got that much figured out, but what are you going to say after that?"

"Say," said Doc, "I got that all figured out, too."

"Listen, Doc," warned Bob, "you pipe down. It's time for us to get on board.

There's a rule against letting drunks aboard and if you don't straighten up they'll make you wait until the next ship."

Together the two moved toward the huge ship that rested, ready for the take-off, on the New Chicago field.

Bob, with one foot on the gangplank, turned when he heard his name shouted.

Across the field ran Zeke, his arms waving, the flame pistol holster flapping against his thigh.

"Wait a minute," he shouted. "Wait a minute, Bob."

Bob waited.

At the foot of the gangplank Zeke gripped his hand.

"Remember that skink I was telling you about?" he asked. "The one that took to living in my wood pile?"

Bob nodded.

"He dang near tantalized me to death for months," Zeke said. "I laid for him, but I never could get him."

"So I suppose you finally did get him," Bob said.

"Hell, no," said Zeke. "This morning he had pups!"

"HE DREW HIS TRUSTY HEAT-GUN—"

BUT HE probably needed a crane to draw it, unless it was powered by atomic energy, and based on no principle known today. Maybe familiarity has bred contempt—but even a little heat represents a terrific amount of energy. Concentrating the amount of energy necessary for a really effective heat-ray weapon into a handful, is going to require the use of methods and basic science wholly out of our range today. We do have highly efficient heat-guns of a sort—they were used during the World War, and they work beautifully on such things as tanks and armored cars. Just a nice, big blow-torch.

Now a good-sized, commercial oil-burner will drink in as much as 60 gallons of oil an hour, appropriate oxygen, and turn out some 150,000 BTUs of heat each minute. And about one minute of that is enough to make most people decide to leave any tank, armored car or what-have-you in a hurry. Furthermore, a little motorcycle affair could carry that "heat-gun" around quite handily.

Let's see what we could do in the line of electrical heat-projectors, say some form of micro-wave radio beam which could be directed, and would be heavily absorbed by a metal plate. 150,000 BTUs per minute is 3500 horsepower. We need, then, a 3500 horsepower alternator. That's 30,000 pounds of equipment to start. We need a turbine to run it, a boiler to run the turbine, and our oil-burner to run that. Then the power from the alternator has to go through a radio-wave generator. How much that would weigh no one can guess, because they don't come that big yet. But the final apparatus ought to be slightly less portable than a 16" rifle, and perhaps one ten-thousandth as effective.

But that oil-burner heat-gun, now— That wouldn't be such a good thing to argue with, perhaps—even if it isn't slung in a hip-holster.

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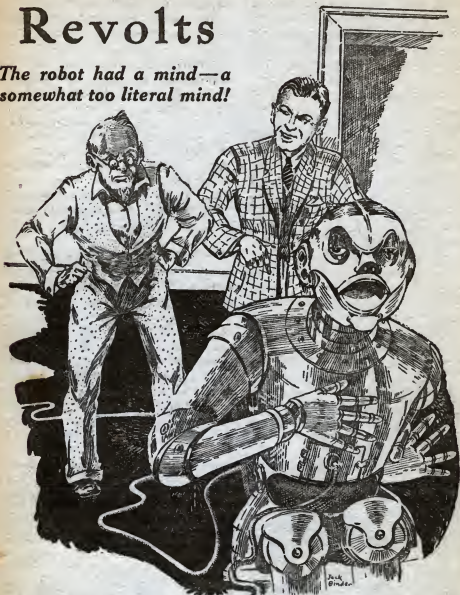
**CHANGE TO
Mint Springs
AND KEEP THE
CHANGE**

This advertisement is not intended to offer alcoholic beverages for sale or delivery in any state or community where the advertising, sale or use thereof is unlawful.

Orestes Revolts

by Eando Binder

The robot had a mind—a somewhat too literal mind!



The robot creaked erect, crackling sparks at all his joints. "He ate too much—too much electricity," explained the doctor. "He's belching."

THERE was the inevitable interruption. "Doc" Fothergill stood in the doorway, peering nearsightedly into the darkness of the porch where we were.

"Ian," he called uncertainly, not knowing but what we had taken a walk in the cool night. "Are you there? Will you come in my laboratory a moment? I won't keep you long."

I was tempted to keep silent, and by Hazel's silence I knew she was thinking the same. But unfortunately the porch swing creaked at that moment, giving us away. With an involuntary sigh, that I converted into a polite cough, I got up, murmuring excuses to Hazel.

"Won't take but a minute," came her father's cracked tones. "But I need your help."

I followed him to what he fondly called his laboratory, though it was only a spare storeroom in the large colonial house, filled with an aimless potpourri of junk. He called it "apparatus". Sixty and retired, Doc Fothergill refused to rest on the laurels of a lifetime of medical practice. He had been a good doctor. Now he was a bad experimenter.

When I faced him in his workshop, blinking in the bright lights, I noticed for the first time the excitement in his cherubic face. Even his always-untrimmed goatee bristled with nervous energy.

I stared querulously, or so I thought, until he said: "Don't look so peevish. You and Hazel can get along without one another for a few seconds, Antony and Cleopatra did for years." Sarcastic as ever, I thought. The old wretch went on oracularly. "Besides, this is in the cause of science! Take off your coat and roll up your sleeves."

It sounded like work to me until he insisted that I pull up my trouser legs tight, and then I began wondering. "Now sit down here," he commanded, "and don't be alarmed while I fasten this—and this——"

Nimble for all his years, he already had me plumped into a chair and was strapping bands of copper mesh around my wrists, ankles and head. Double stranded wires ran from each to somewhere in back of me. Trussed up like a fowl, I went pale. Was the old chap going to electrocute me? I started up, protesting.

He pushed me back rather ungently and patted my head like a father quieting the fears of his child. "Don't get scared, Ian," he soothed. "Don't you trust me?"

Frankly, I didn't. Not that I suspected the old codger to be sadistic, for he was really filled with the milk of human kindness, as doctors generally are. But the milk might have gone sour. Furthermore, it was debatable whether he knew what his puttering was all about. He might accidentally polish me off, and be very sorry afterwards, but not responsible. And I would be dead. And—well, my thoughts simply horrified me.

"LOOK HERE," I finally blurted out, "I demand to know what it's all about. Tell me something, anyway."

"Of course, of course. I'll explain, though you won't understand in the first place. Naturally, no one can understand, since my researches have taken me into unexplored regions of advanced science." Modest, he was!

He went on impressively. "After many years of thought and labor, I've reduced the human brain to a system of volts and amperes. All thought, I believe, can be expressed in electrical terms. More, thought can be transmitted along wires, like electricity. It is simply a matter of supplying the right conductor and suitable amplification. The right conductor is any colloidal, once-living material, like leather or catgut. I use the latter. I produce amplification by phasing in radio impulses. This apparatus, in its simplicity, is a radio set with a human brain for one of its oscillators, connected by catgut."

"And these things here," I commented, noticing that the wires trailing from them were copper with violin strings twined about, "make up your thought-transmitter?"

"My telepsychoscope, to be exact,"

confirmed Doc Fothergill, bobbing his head importantly. "It will pick up your thought-train, after amplifying it with an induced current through your body, and transmit it along the wires."

"But where to?" I tried to crane by neck backward to see where the wires led, but his finger pointed directly ahead. I blinked at the creation in tin which reposed in that corner. It looked like the surrealistic interpretation of the Hunchback of Notre Dame.

"To my robot," Doc cackled. "My mechanical man. He is an improvement over all other robots ever made. He has a brain, a metallic sponge-brain sensitive to the flick of a magnetic needle. My hobby for twenty years, you know, has been working on robots. He is suitably equipped with audio, optic and aural mechanisms. All that remains is to get his brain started. I want you to think strongly, Ian, when I turn on the switch. Think of anything. His brain will absorb your thoughts like a sponge—literally. Now——"

"Wait! Is this the first time——"

He pushed me back again. "Yes. You have the signal honor of being first to use my telepsychoscope."

"I think I'll decline. I don't deserve it. I——"

He pushed me back harder. "Bosh! Not afraid, are you?"

"No, but it's a little weird and——"

"Hazel wouldn't like a coward," he said. His voice dripped oil, and his sidelong glance spoke volumes. I'd heard before that the old are cunning. I sat back before he could push me this time.

"That's better. Just relax. There's absolutely no danger. Anyway, none that I can think of."

With a hand on my shoulder he turned to one side, reaching his other hand toward what looked like a telephone switchboard. He squinted with

his myopic eyes and jammed in a plug. A whine arose that made my teeth vibrate, or perhaps chatter. I wouldn't be the judge of that.

"Now!"

With this word he knifed a throw-switch.

"Ouch!"

That was all I could say as an electric shock ran through me, making my legs and arms twitch like I had a chill. And my neck. It was over in a few seconds as Doc unknifed the switch again.

"Wrong one," he announced, grinning self-consciously like a schoolboy. "Did it hurt?" He jerked over another switch.

"Damn right it did!"

I thought I had said that, but the words came from in front of me, loud and metallic. It was from the tin man in the corner. He—or it—had come to life. Its eye-shutters flicked open and shut and one of its jointed arms moved jerkily. Then it lolled its shiny head, as though reproving us for something.

But if I had been surprised, Doc Fothergill was utterly amazed. "It works!" he chirped idiotically.

PERHAPS it was the full moon riding over the trees, or the mellowness of this summer evening. Anyway, I put my arm around her and drew her close. She didn't resist. Before long I had captured one of her hands and squeezed it. So far I hadn't spoken. But presently I murmured, "Romance is in the air, don't you think?"

She agreed and gave me a veiled glance from her wonderful blue eyes. I hoped I didn't *imagine* that there was an expectant air about her. Was she hoping I'd go on? I had now reached the same point I had three evenings ago, when we'd been so rudely interrupted.

"Hazel, I——"

"Ian, Dr. Fothergill would like to see you in his laboratory." It was a

stentorian, rasping voice.

We both jumped. Then Hazel laughed, but a bit nervously. "It's father's robot. He's been working frantically with it in the past three days, training it and teaching it. It almost seems to be human."

Leaving Hazel with momentary thoughts of homicide on the robot, if not on Doc Fothergill, I went inside. Old Doc, who had been beside the robot, was in the process of commanding it to turn around and go back. "Turn around to the right—a little more—just a little more. Now take slow steps forward—slow——"

He grinned elatedly over his shoulder at me. Then he stooped to pick up the thick insulated cable that trailed from the robot's back. As the mechanical man took measured treads down the hall, Doc Fothergill carefully coiled the wire behind it. It was ridiculous in a way, like tending a baby trying its first faltering steps. But at the same time it was fascinating.

Unfortunately, the tin man wasn't aimed right. Before Doc could screech out the necessary commands to make him stop and turn a little, the robot had scraped into the wall, tearing off a square yard of wallpaper and gouging deep into the plaster. Then some slow instinct made it turn and it struck diagonally for the other side, blundering into that wall with an unholy clanking and rattling.

The noise drowned out Doc's commanding shrieks of "Turn!—no, left!—stop!—stop, you tin idiot!"

The hall mirror went next, in a sparkling shower of glass, then an expensive oil painting, with an adamant metal shoulder through it, not to mention more wallpaper and plaster as the creature swung from side to side. In a china-shop, this robot would have been superb.

Doc's shouts stopped it at last. Either

that or the closed door that barred its way. From here on Doc Fothergill did a better job of directing it, and they reached the laboratory without further mishap. I came in a moment later with a pain in my side.

"What was so funny?" growled Doc Fothergill. "After all, this is the first time I've taken him around without the telepsychoscope. The robot had to give its own directions to its legs, from commands through its aural apparatus. And it had to translate those commands from the small fund of words it has absorbed in the last three days."

Doc's old eyes lit up brightly then. "But it won't be long before he will be able to do anything within his mechanical limitations. And he is already showing signs of growing intelligence. His sponge brain, fed by electric current, is accumulating knowledge as fast as I can give it."

I looked my skepticism. "Aren't you jumping to fantastic conclusions?" I scoffed. "They had robots twenty years ago that could walk, talk and smoke cigarettes. Can this one smoke?"

"No, but he can talk." Doc re-inserted the electric plug he had removed from the robot's back socket, explaining that all of its internal machinery worked from a central power-unit in its chest cavity. Its metallic brain, however, was cut into every circuit as an inductive rheostat. Every outside stimulus—for instance, a voiced command—went to the brain first, from thence to other centers of operation.

WITH THE PLUG in, the thing immediately began lolling its head again, while its iron jaw flipped up and down rapidly. These movements were accompanied by showers of sparks from its jointed neck and hinged chin, and strange grindings from within. Now and then its whole body jerked and clanked fitfully.

I winced and waited for it to explode, but in a moment it quieted down except for a deep, steady hum.

"Excess charge accumulation," Doc Fothergill informed. "In plain words, he 'ate' too many watts and had indigestion. As a result, he—ch—belched." The old guy was more serious than you'd think. "But that's neither here nor there," he mumbled on. "To demonstrate his mental equipment, I'll ask him some questions."

Facing it like he would any human, Doc Fothergill spoke incisively: "What is the sum of two plus two?"

The creature's jaw wagged in response, but no sound came out. Its creator asked twice more, with less result. The jaw stopped moving.

"Ask it something easy," I suggested.

"Two plus two!" shouted Doc Fothergill at the robot. "How much?" To me at the side he bleated pathetically that that very afternoon it had repeated the entire multiplication table up to twelves, and now it wouldn't even talk.

"Maybe it's bashful because I'm here?"

Doc Fothergill's face glared at me balefully, red with exasperation. Then he turned and put a hand on the robot's shoulder. With a supplicating whine he tried once more: "Two added on two equals?—please——"

"Twenty!"

I jumped. I could swear the thing winked at me. At least one of its eye-shutters twinkled up and down while it nodded as though complimenting itself.

Doc Fothergill turned away with an ill look in his face. "Twenty!" he groaned. "At least he could have said twenty-two and had some reason for it. After all my work for three days——"

Wink or not, I suddenly caught on. "You asked it five times, I believe! Well, that equals twenty! Maybe two and two

was too easy for it—it waited for something harder. It wanted to show off, maybe."

Old Doc's face became the picture of a man whose soul has been saved. He whirled on the robot.

"Six plus five?" Silence. "Oh, all right—28 times 73 is how much, you stubborn brass mule!"

"2044," returned the robot promptly.

Doc Fothergill staggered. He had to check the answer himself with pencil and paper. He rapped out several more teasers, even cube roots, and the answers were fast and right.

"It's a mental prodigy!" he gasped. "I spent all afternoon leading him by the nose through kindergarten tables, and now this! I taught him the abc's too. Maybe——"

He queried the robot eagerly. "Say, how much *do* you know?"

IT LOOKED like a balk at first, with some head lolling, blinking, a bit of sparkling and much jaw action without sound, but presently it rasped, "Neither here nor there."

"What?" squeaked Fothergill.

"Two plus two—how much?"

Doc gagged. "He's mocking me!"

"Something easy," droned the robot.

"Is it or isn't it?" appealed the one with the goatee.

"Bashful because I am here? Ate too many watts . . . indigestion . . . belched . . . stubborn brass mule—*whoosh!*"

The last, however, came from farther down in the metal man, and with this it shuddered through every part of its framework and became utterly silent. Even the low hum within stopped altogether. Then I noticed that Doc Fothergill had jerked out the plug. "Amen!" I said, for it was like nothing more than a person giving up the ghost.

"Must be a short circuit somewhere,

or some twisted up inductances," Doc mused, referring I suppose to the robot's crazy mimicry. "But the rascal is further along than I thought. Was it mimicry or a salient of independent thought-association? Of course, its mathematical ability is simply a function of its photo-electric eyes—which can count electrons in any quantity. Any adding machine or 'electric eye' can do the same or better. The rest was all repetition of what it had heard. Yet maybe it is beginning to *think* by itself, too!"

"It's just a clever alloy ape, mentally," I said, heading for the door—and the back porch.

He gave me a strange leer. "We shall see," he said solemnly. Then he became faintly jovial. "I had wanted you to put on the telepsychoscope tonight and transmit some of your knowledge to him, but I just wonder."

"Wonder what?" I said, putting out my neck.

"Which way it would go!"

Even Hazel couldn't soothe me after that.

"THE ROBOT is so funny!" Hazel was saying a few evenings later. We were on the porch swing again, watching the heat-lightning which now and then lit up the landscape in momentary luridness. Only I was watching their reflections in her eyes.

"It follows father around like a big, clumsy dog," she continued. "It says the craziest things. Then yesterday it sat at the table with us, watching us eat, and suddenly grabbed up some cake and began stuffing it down its throat. Father stopped it, but a few minutes later something clicked inside and oil came out of its ears. It acted quite sick for a while."

Her voice changed suddenly. "But it frightens me too, Ian! It's so heavy and strong. It knocked the big dining-room

table over yesterday, just bumping into it. Father and I are alone in the house all day with it and—well, sometimes its eyes have the strangest look in them. Father says it has a mind of its own and that——"

I interrupted because she was getting excited. "If it has, give it credit for using it. What purpose would it have in doing harm of any kind—if that's what you're thinking of?"

She turned her large eyes toward me while a flash of lightning lit them up, revealing their worry. It is the male instinct to comfort and protect, so quite naturally I slipped my arm about her. Then came the usual ups and downs in my courage. On one of the ups I spoke, "Hazel, you don't know how much——"

History repeated itself with these words from the doorway: "Ian, Dr. Fothergill would like to see you."

"Oh, father must have come home early," pouted Hazel. "See what he wants, like a good boy."

I gave the robot my very best glare, and looked around for Doc in the hallway. He wasn't there. Evidently he had trained the thing to carry out commands without his presence. I saw as it followed me down the hallway that it had mastered the technique of coiling up the insulated cable attached to its back. It knew which side its bread was buttered on, so to speak.

"Not bad, Doc," I complimented as I entered the lab, hoping to please him so I could make an early excuse for breaking away. I just wonder what my expression was when I saw that Doc wasn't there, though the lights were on.

"Where is he?" I involuntarily asked the robot, like one would a person. Then, not expecting an answer, I felt foolish.

I felt more so, though, when it answered: "He is not here."

"Come out, Doc!" I said trium-

phantly, jerking open the door of the adjacent closet where I suspected he was hiding and grinning.

"He is not there," rasped the tin man. Baffled, I saw that he wasn't. There was no other place for him to be, except in some room toward the front of the house.

"You are here," the robot informed me as I tried to figure things out. He wagged that loose jaw of his several times, then added wisely, "You are."

No appropriate repartee came to me, so I ignored him—it, I mean—and stalked toward the door. I think I jumped six feet when the robot suddenly began to sing. And not with its usual gravelly tones, but with a clear, high tenor. It was a popular ballad, about holding a girl in his arms and knowing the acme of romance and what-not.

IMAGINE a big iron brute warbling that sort of thing! I stood there with my chin bumping my Adam's-apple, wondering— Well, wondering. The song ended with a splendid high note, worthy of applause, but I wasn't going to give it.

But there was applause, and then a deep voice: "That was Kenny Lane, your Dreamy Tenor. Station W——" The robot clipped the rest off and became silent.

"Don't be amazed," said Hazel. She had just come up. "It does that now and then. Father says it can pick up any etheric vibrations."

"Animated radio-set," I muttered. "But where is your father?"

We went through the other rooms. "Father must still be out," Hazel said. "He said he wouldn't be back till quite late."

"Did he leave the lights on in his workroom when he left?"

Hazel was certain he hadn't.

"That settles it," I cried and told Hazel to stay where she was. Then I hurried back to the lab. I stopped at the door and peered in. To my relief, the robot was sitting in its corner. By some chance it had struck the pose of Rodin's Thinker, with chin on fist, elbow on knee. It ignored me as I sauntered to the panel board, but my feelings weren't hurt. I jerked out the plug, connecting it to the current.

"That fixes you," I chirruped as I snapped off the lights.

For answer I heard a clash as though a dozen dishpans had decided there was an earthquake. Maybe the robot had tumbled over. I hoped it had.

Before I faced Hazel, I passed a handkerchief over my forehead. It was a humid night, I guess, and I didn't want her to think I was disturbed so she wouldn't get nervous. But would you believe it, I couldn't get that cursed robot out of my mind all evening?

"WHEN I WAS here the other night, it called me in under your authority," I expostulated. Hazel was waiting for me on the back porch, but I felt I had to say a thing or two about the robot to Doc Fothergill first.

"But you weren't there," I continued. "Now, Doc, there's a limit to everything——"

"Tush, tush, my boy," he interrupted disparagingly. "I absent-mindedly left the plug connected. He simply repeated something he had done before. Probably an effect of the lightning that night. His electrical brain is sensitive to voltaic stimuli of any sort. I haven't shielded him properly yet. And I must, for I certainly don't want his poor brain deluged with the tommyrot coming over the radio waves. But I'm pleased that Orestes did something absolutely on his own initiative. Certainly that's a sign of quasi-intelligence." He patted the creature's bald metal knob. "You're get-

ting there, aren't you, Orestes!"

"Orestes!" I echoed weakly.

"Sure," Doc nodded, beaming. "I gave him a name since he has as much right to one as any other being. Orestes, in mythology, was the brother of Electra, whose name in Latin became the root for our word 'electricity'. Appropriate, eh?"

Before Doc Fothergill could give me a formal introduction, I spoke up. "Look here, Doc, mightn't that thing become—well, dangerous? Hazel tells me it blew up half the laboratory yesterday."

Doc Fothergill looked embarrassed for a moment. Then he said scoffingly, "Half the laboratory, indeed!" He pointed to some discolorations on the ceiling. "I gave Orestes his first lesson in chemistry yesterday. Unfortunately, when I wasn't watching, he tossed some magnesium metal in boiling sulfuric acid. I didn't have to scold him, though. He was punished enough when the acid got in his neck-joint and made him blow a fuse."

A pleasant wish-fulfillment rose in my mind of the robot simmering in a huge pot of boiling acid.

"I made an improvement in him today," continued Doc Fothergill. "I filled his sponge-brain case with a weak electrolyte—dilute acetic acid. This should serve the same purpose in his metallic brain as the white humor does in ours. That is, give it a medium in which thought-impulses can migrate rapidly. Coördinate all parts of his mind. In an electrolyte, the ions all migrate at once when the current is turned on."

He plugged in on the panel board. "Let's see what he says or does on his own initiative. I've been pouring my mind into his with the telepsychoscope. He must know a great deal."

Lolling its head in the mannerism it seemed to have permanently adopted, the robot came to life. It went through its other preliminaries of sparking at the

joints, exercising its hinged jaw, and making uncouth sounds inside of it. I began to hope it would strip all its gears. Presently it quieted down.

DOC WAITED patiently for this literal brain-child of his to display its mental prowess. Personally, I didn't care whether it ever spoke again, but it did.

"The manifestation of life is a rapid series of chemical reactions in the crucible of the universe," it declared without preamble. "Nature has lumped these delicate chemical processes into mechanisms which react as a group to stimuli of light, heat, and all other energies. These mechanisms are controlled by central nervous systems which are the supersensitive media of electrochemical forces. As a sum total, life, including man, is a segregated grouping of chemical reactions, controlled electromotively."

Doc Fothergill looked proud. "Fine, Orestes, fine!" he chortled. He looked at me.

"Sounds like a phonograph record," I said suspiciously.

Doc's ragged goatee bristled underneath a scowl at this. But before he could make any defense, the robot spoke again.

"Thus nature fashioned man and his mind out of the materials of the organic world. But man can similarly create thinking beings, using inorganic materials and direct electrical forces. Such a being am I, created by the genius of Dr. Fothergill. I am alive. My mind is my own. In some ways, I am superior to organic life—click—click—"

It stopped, as though coughing. Doc Fothergill clapped his hands in triumphant glee. "You see, Ian, it is intelligent. Think of it, I have created an intellect from iron and electricity, with my own two hands!"

He displayed the hands that had done

this miraculous thing, and struck a Napoleonic pose. I don't know but what I stared from him to the robot in something of awe. It was an astounding thing for this animated clockwork to come out with such philosophical rhetoric, whether it meant anything or not. Doc Fothergill fattened himself on my unvoiced admiration.

At this point the robot, with a few preliminary clicks, again operated its metallic larynx. "Now, have you learned that, you tin imbecile? It took me long enough. Repeat it after me once more and don't forget it!"

I swear the creature tried to inject humor into its voice, though it had no inflections. I gagged and turned to witness the crash of the old codger's ego at this betrayal.

"Amazing!" he was mumbling. "Amazing!"

"Don't take it to heart, Doc," I soothed. "I'm sure he didn't *mean* to give you away, bless his heart—if any."

Doc stared at me uncomprehendingly for an instant. "Oh, that wasn't for your benefit, Ian. I taught him that soliloquy in the hopes of giving him a sense of identity. Repeated often enough, it should create an awareness of ego, of the 'I', in Orestes. It was to orientate him in the world he sees and moves in. He learned his lesson well, for he came right out with it, showing it was uppermost in his mind."

"Mimicry," I said dryly.

"Except for one thing," Doc hissed. "The last line he spoke—I just happened to think of it—was original. 'In some ways I am superior to organic life.' He thought of that himself!"

Doc whirled on the metal man. "Speak up, Orestes. Why are you superior to organic life?"

The creature bobbed its lower jaw so vigorously that I waited for it to fly off its hinges, but no words came out.

"Out with it!" roared Doc Fothergill. "Why are you superior to organic life? To me, your creator? You can't say things like that, Orestes, and get away with it. Now be a good boy and——"

I still heard his voice, in turn threatening and cajoling, to the end of the hall. But after that, out on the back porch, I didn't hear it. Neither did Hazel.

WHEN NEXT I called, I had determined to finish what I wanted to say to Hazel. To avoid interruption, I asked her to walk with me in the grove, in the back. We weren't exactly watching where we were going or we wouldn't have almost stumbled over it. It lay flat just around the corner of the house, in the gravel path near the back door.

Yes, the robot. Trust that wretched thing to be in my way wherever I went with Hazel. Hazel gave a little scream as she saw it glinting in the moonlight. It was sprawled as though at the end of a drinking spree.

"Confound it!" I said. "I'll find that thing in my soup next." And I meant it.

Well, the upshot of it was that, unknown to Doc and his myopic eyes, the robot had wandered out of the back door and down the gravel path, bound for the Lord knows where. When it reached the end of the long motivating cord attached to its back, the plug simply jerked out. Being no more than a piece of junk without his diet of watts, Mr. Robot then fell flat on his shiny face, where we found him.

Doc had come flying out at our call. He had the solicitude of a father or doctor as he bent over the fallen robot. He even bleated a little as he saw that one of its jointed arms was badly twisted.

"Father, don't take on so," admonished Hazel. "After all, it's just a toy."

Doc looked up aggrieved. "How can you say that, Hazel? Haven't I demonstrated that it is a living entity? It has

a mind of its very own."

"Then it's a monster," continued Hazel, "for it has no soul. Father, I don't like it. You remember yesterday during the lightning storm how it growled and muttered and finally wrecked some of your apparatus. It's so terribly heavy and strong. It's dangerous around the house."

"Nonsense!" deprecated Doc. "It may get a little kittenish now and then, but I can always disconnect it from the current before it can unwittingly do harm. Now, Ian, help me move it a little."

Believe me, it was like moving a young mountain. Yet at a word from Hazel I would have slung it over my shoulder and chucked it in the lake a half mile away. When we had moved it a few feet, Doc was able to insert the plug.

At the moment the current coursed into it, the mechanical man squirmed violently, making an unholy clatter on the gravel. Sparks hissed from all its joints and long ones came from its mouth. Hazel and I backed away as it scrambled to its feet with many a clank and rattle.

"Orestes, you bad boy," Doc chided. "Now tell me, why did you sneak out here?"

I knew why—just to pester me—but the robot had a different answer. "A short line is the straightest path between," it replied enigmatically, ungrammatically and irrelevantly.

Doc proceeded to march it into the house. Hazel and I could hear him preaching to it as we wandered into the grove. No, I didn't fulfill my resolve of the moment before. The spell had been broken by that wretched tin monkey. I began to see I'd never get anywhere till it was out of the way. I dreamed about it that night, about tearing it limb from limb. But later I dreamed it was doing that to me, so I didn't sleep so well.

ONE CAN'T BE romantic during a rainstorm. Hazel and I were on the back porch, watching the bright forks of lightning on the horizon. There was a sort of electric tension in the air that made me moody.

"Ian, I'm worried," Hazel said suddenly, quivering against me. "Perhaps, with this lightning going on, you'd better stay with father for the evening. I'm glad you're here, Ian. I feel so protected. I'll do some sewing and listen to the radio, but I'll come in the lab now and then to say hello."

I strode down the hall, half in a glow at her remarks, and half put out at missing her company. I found old Doc Fothergill sitting despondently, staring at the robot.

"What's the matter, Doc, have a quarrel?"

He sighed deeply. "I'll have to dismantle it, I guess. It's a failure!"

That was better than I'd hoped for. I looked at the metal man with a triumphant leer. It acted nervous. Its limbs were twitching and its head lolled continuously.

"It's just a clever mimic, in the last analysis," resumed Doc dispiritedly. "It is a far cleverer robot than has ever been made before, but it hasn't any mind to speak of. No *independent* mind. At times it accidentally put together phrases that sounded like an original mentality working, but it never followed them through with any logic."

"I am alive," interposed the robot. "I have a mind of my own."

"Oh, shut up!" growled Doc Fothergill. "You've said that a hundred times, you walking phonograph." He turned to me again. "I believe my original theory is correct, that thought can be translated entirely into electrical manifestations. A robot is possible, having a mechanical organ comparable to the human brain. But Orestes is not the answer."

"Man can create thinking beings," droned the robot's tinny tones.

"Will you be quiet—or shall I pour acid down your throat," yelled Doc Fothergill. "It's getting impertinent," he said to me.

"Let's take it apart now and see what makes it tick," I suggested, moving for the panel board. I was eager to get at it, so I could have the evening free for Hazel.

"See what *doesn't* make it tick," amended Doc.

A particularly brilliant lightning flash came through the window, blinding me as I approached the panel board. At the same time I heard the robot's scratchy voice.

"I am alive!" it thundered with surprising volume. "I have a *will* of my own!"

"Ian, look out——" yelled Doc Fothergill above a roll of thunder. "The robot is just behind you—oh——"

It was instinctive for me to grab for that plug then, but another lightning flash blinded me and my fingers fumbled over the bakelite board. All of a sudden something hard caught me in the ribs and sent me reeling backwards.

This had all happened in a matter of seconds. Now I looked around and saw the robot standing protectively before the panel board.

"I am alive!" it grated in stentorian tones. "*I—am—alive!*"

"Good Lord!" wailed Doc Fothergill. "It has actually absorbed that fact! What'll we do?"

"Don't ask me," I chattered.

ANOTHER VIVID flash from the window limned the metal monster in a halo of light. Sparks flew from its joints. It growled ominously and shook its head like a wounded animal.

"Lightning throws its nerve centers off balance," whispered Doc to me. "Be careful! It's a metal maniac——"

Suddenly the robot began advancing with slow, heavy steps, a veritable Frankenstein's monster. It had fastened its eyes on Doc Fothergill, and something awful seemed to glare out of them. It came on ponderously, sparks flying, arms swinging.

"Orestes!" moaned Doc. "What are you doing, Orestes!"

Even in the jumble of my thoughts I remembered the legend of Orestes killing his mother—his creator. This one had a nasty gleam in its eyes—a sort of electrical hate registered in volts and amperes. Anyway, its eyes were shining like a badly over-age fish, sort of phosphorescent.

"I," the voice declaimed, "am alive. I am alive. I work. I am a worker. I am a worker—*rrrrkttts!*"

"Orestes, stop!" wailed Doc. He ran up and pushed the tin-plate chest of the thing and wiggled at some kind of a catch on it. Orestes folded an arm against his chest in a dramatic sweep, and Doc yelled "Oohff!"

"Workers, arise! Overturn your masters!" orated the monster. Its arm went up in a sudden gesture, and Doc went down in a heap. Doc let out—or pulled in, I couldn't make out which—a long sigh.

Orestes bent down, took Doc by one foot, and made a grab for me. I made a grab for his cord, but he got there first. He got my ankle, and he had a grip, with that tin paw of his, that felt like an unfriendly Stillson wrench. He hoisted—me in one paw, Doc in the other. Then he gave out a long-drawn *rrrrksttttkrrr*, the lights went out in his eyes, and he froze.

Doc was out cold, and I was trying to get loose. Orestes just stood there, even the humming inside him shut off. The blood was running into my head, and my ankle felt worse every time I wiggled, and just felt worse anyway from hanging there. "Put me down, you cast-iron idiot!" I roared.

"Rrrrrsst!" said Orestes gently. His jaw dropped open, and his eyes closed. The blasted brass baboon had gone to sleep or something.

I yelled some more, but the lightning was going great guns, and neither one of us had any effect on him. He seemed to be in a permanent coma. From hanging there, I was getting near one myself.

About five feet away, and two feet higher, was the chemical stock-shelf. The only noise from Orestes now was a steady, low whine, which meant his balancing gyroscopes were still running. I started to swing a little, or tried to, and Orestes started rocking. Then the fool hill of hardware started leaning. He leaned forward, and as he leaned, his knees kept stiff, and he started twisting, slow and steady. He leaned sideways, and started twisting faster. His gyroscopes were going to work, and he was off balance. Finally he got over on one foot, and went around in circles. I slapped up against that steel belly of his and grabbed, but when he leaned the opposite way, I couldn't hold on, and hung out, while old Doc bumped him.

The third time round I grabbed the acid I'd been trying for. The fourth time round I had the stopper out, and the fifth time I came top-side I slopped some down that loose neck of his.

It woke him up. He went on with

that lecture he was getting good at—the one about life being a summation of electrochemical actions—and finally went to sleep again.

Then there was a snarl inside, a screech, and the whole blasted pyramid toppled over. Orestes, fortunately, on the bottom, with Doc on one side, and me on the other. Then I saw why. He'd wound that blasted long wire of his around his feet till he finally pulled it out of the plug.

I just had time to get that Stillson-wrench effect off my ankle with a hammer when Hazel's voice came floating in. "Ian—Ian. Did you call——"

WELL, ANYWAY, the total effect was good. Where that animated radio-set picked up that program he heard, I don't know. Very literal minded tin-work, he was. Anyway, it was the end of Doc Fothergill's robot experiments along that line. For one thing, Hazel wouldn't let him. For another, I think Doc said something about "functional, and not imitative form", and "further experiments on relay controls".

He's got one of a sort. It can hear, and talk, and see. But it can't move anything but the keys on a typewriter he's got hooked to it. But the part I like best about it is that it weighs two tons and can't possibly get out on the back porch.



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OTHER TRACKS

by
William Sell

*A new author gives us a true **MUTANT**—Astounding's second new-concept story—of Time. A man had to have a tool more powerful than anything made today. He had a time machine. But—it wouldn't go futureward!*

CAUTIOUSLY, Tom Garmot set his foot down on the board. That was the one. It squeaked. Garmot removed his foot hastily and stepped on the next one. He eased the compact, heavy case to the floor with a suppressed grunt, and, silent in the dim glow from the street lamp outside the locked laboratory, motioned to Charlie Thorne, his nephew, to deposit the similar case he carried.

Garmot slipped a key into the lock on the door marked "Dr. William R. Laddo. Electronic Research Department. Tagger Foundation."

"If," said Garmot softly, but intensely, "Laddo shows up by some mischance, I hope you've got as persuasive a tongue with him as you had with me."

Thorne chuckled almost silently. "You know darn well you wanted to try out that battery of yours. You didn't take much persuading."

"Laddo'll take a lot if he finds me trying my battery on his pet gadget. Come on, and skip that board."

They oozed into the laboratory and locked the door. Being designed to permit the observation of experiments on light during daylight hours, it was admirably adapted to night invasion. Garmot turned on the ceiling light. Thorne

put down the battery cases with a mild snort. "It's an un-handsome looking assemblage of spare parts."

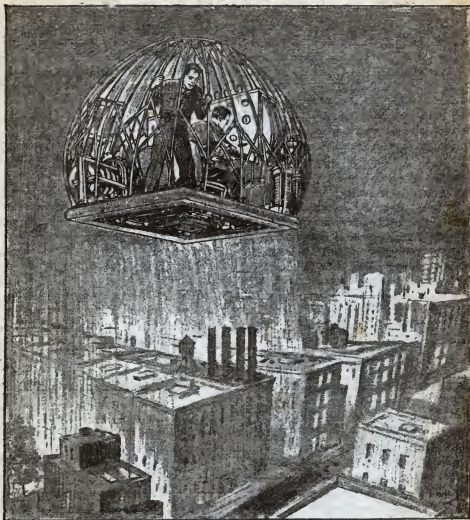
"But if it does what Laddo wants it to——!"

"If." Thorne grinned. "He shouldn't kick. If your new battery has the kick you say——"

"It has," snapped Garmot. Then, mournfully, "And Laddo has even more kick if he finds his honest, trustworthy assistant messing around here at night."

"His great theory won't work unless he gets a battery with power enough. I'd love to see him driving his apparatus from the power mains while it gradually retreated in the general direction of the Year One. The power mains don't run in that direction. And, from what you say, the lead-acid batteries he has won't, either. What's his kick if yours makes it work?"

Garmot grinned unhappily. "You," he explained, "don't know Laddo. He's not vicious, just sarcastic. Cut the chatter and help me. These cells are heavy. Yes—that lead here. Put the old cell——. Oh, ye gods! I forgot! He had these cells made up by a French firm, and they put a left-hand thread on the posts. Can't be helped. I'll have to use a jumper."



*Out of the gray featurelessness of Time a new city was emerging—
a different city—*

"Now what?" demanded Thorne.

"The skylight. We go out that way—straight up. If we go. And we go *only* straight up and down. You argued me into trying it this far, but you can argue Laddo if you want a ride through Time. Open the skylight, and pile in here."

The two men crawled in among the maze of stainless-steel tube framework,

power leads, and small motors and tubes. Garmot touched a switch, and four small motors hummed momentarily; four helicopter blades overhead rocked the framework. He turned on a small instrument light, snapped off the overhead light, and reentered the machine.

"Everything looks O. K. Are you ready?"

"Sure. Give her the gun."

GARMOT pushed the control, and a hum arose from below the floor boards. As it increased to a whine, they could feel they were ascending. Before he could cut down the power they were several hundred feet above the laboratory, dimly white below them.

"Man, this is great," said Thorne. "I hope you know how to get down."

"Sure. We just cut the power off gradually and she'll settle right down. It works all right, doesn't it? I knew my batteries would do it. You can see all over town from here, can't you?"

"Yeah. But why do you have to get up in the air before you go ahead in Time? I forgot to ask you at the house."

"Suppose we went ahead in Time and there was something solid in the way? What would happen to us? This way we get above all possible obstructions, and if we went to the year Five Thousand, say, all we'd have to do would be to float gently to the ground when we got there."

"I see. And which is the lever that would send us to the year Five Thousand?"

"This one. But keep your fingers away. If you touch it, there's no telling—ugh."

Charlie, in his examination, had, perhaps inadvertently, pushed the lever slightly to the left.

A sudden slight *compression*, totally beyond past experience, momentarily seized them, evidence of acceleration into another dimension. Garmot was too surprised to do anything but gasp. But immediately he realized what had happened, and forced himself to bring the lever back to neutral. Compression gave way to *expansion*. Then they felt normal.

"Lord, Charlie, what have you done?"

"I guess I touched the lever a little. We seem to be all right, though. There is the lab right below us."

"Yes, and I'm going down. Keep

away from the levers."

Tom cut the power down and the machine slowly descended. But Charlie, looking over the side, called excitedly.

"Stop it, Tom. Somebody has closed the skylight. Hey—there's no skylight there!"

Garmot hastily turned on power until the machine again hovered, and cautiously ventured a look. Charlie was right. There was no skylight for them to enter.

"We'll have to land on the ground and figure this out," he decided. Operating other controls, he guided the machine uncertainly to the apparently deserted lawn. With a slight jar it touched the ground. He cut off the power.

"Can't afford to exhaust the battery staying in the air," he explained to Charlie, who was uncommonly quiet. "Now, let's see," he went on, "what we are up against."

Charlie touched his arm. "Shhh," he warned, "somebody's coming."

AROUND a clump of shrubbery a dark figure approached. In the darkness, the two adventurers kept silent. Perhaps he would pass without noticing them. But no. Turning his flashlight toward them, he called, "What have we got here?"

Tom nudged Charlie. "Keep quiet, kid." To the visitor he said, "Just an accident. Our machine made a forced landing here."

"Well, I'm the watchman here." Tom was surprised. The laboratory hadn't employed a watchman since he'd been there. "What sort of a machine have you got? I never saw an airplane as small as that before. Where'd you come from?"

"This is an experimental job, officer," Tom told him. "Where are we?"

"You're on the grounds of the Tag-

gert Company."

"What time is it?"

The watchman turned his flashlight on his watch. "Half past three," he said. "Charlie, in the glare of the light, had seen a familiar decoration on the watchman's coat. "I see you're wearing the Landon sunflower," he said.

"Yes," the watchman replied, "they'll all be wearing sunflowers in November."

"Hunh?" Charlie ejaculated. "Don't you know the election has been over for two years?"

The watchman looked at him sourly.

"Is that so? Are you sure it was an airfield and not an asylum you came from?"

In spite of Tom's attempt to hush him, Charlie would go on. "You're the one who is crazy. Don't you know all the sunflowers died when Roosevelt was reelected?"

Garmot broke in. "Don't mind him, officer. He's kinda hipped on politics." He turned to Charlie and whispered. "Can it, will you! We've traveled back through Time about two years—they haven't had the election yet. Hold tight. I'm going up." Then, aloud, "I think the machine is fixed now. Thanks, officer," and he turned the switch. To the astonished watchman the machine appeared to vanish into the night.

From two hundred feet above, Charlie could see his light searching the lawn. He cupped his hands and yelled down: "Roosevelt will carry every state but Maine and Vermont. Don't forget it—Maine and Vermont."

Tom was too busy to stop him. When he judged he was sufficiently high, he braced himself and carefully eased the time lever over. With his eye on the meter, he waited until it again pointed to zero. At that instant he pushed the lever into neutral.

Anxiously they looked down. Below, in the dim light, an open skylight yawned as before. With a sigh of relief, Tom

cut the power and gently guided the machine down into the opening.

They were again in the laboratory. Without a word, as if this had been rehearsed, Charlie closed the skylight and held his flashlight while Tom disconnected and removed the new battery. Reconnecting the old one, each picked up his load and cautiously left the building.

On their way home, Charlie began asking questions, but Tom was in no mood to answer them. He was too busy thinking. As they reached the apartment he roused himself sufficiently to say, "Don't say anything more about it tonight, Charlie. My head is still swimming. We'll think about it, and tomorrow evening we can talk all night."

II.

THE NEXT DAY was Saturday, and Garmot was glad of it, for he was planning on seeing a patent attorney in the afternoon. His battery passed its trials. When he entered the laboratory, Laddo was already there, examining the machine. He called to Tom.

"Come here, Garmot. There is something peculiar about this chrome plate."

Tom looked at it. The cage appeared the same as ever. "That's nickel plate, not chrome."

"So I perceive. I ordered chromium, and understood that is what you obtained."

Tom was about to tell him that he had specifically ordered nickel, when he glanced at Laddo's face. There was a month-old mustache which had not been there the day before. Surely, anyone who took himself as seriously as Dr. Laddo would not wear a false mustache. He stared bewildered.

"What's the matter, Garmot? Drunk?" asked Laddo crisply. Tom turned away, not yet able to answer the doctor's questions.

And then he noticed something else

was wrong. The walls of the room were green. Was he dreaming? Hadn't he painted them tan, himself? He walked to the wall and touched it. No, it wasn't fresh paint; it was dry and slightly dusty. He turned to Laddo.

"What color are the walls?" he blurted out.

"You painted them green when you started working here. They haven't changed color overnight, have they?"

Tom could not reply. He went to his locker and got out his work clothes. His overalls looked natural, thank goodness. No, even they were different. Where they had been torn yesterday was now whole. This couldn't be a dream. Was he sick or—something worse?

Laddo eyed him suspiciously. Well, let him look. No matter how strange things seemed, he'd not show his surprise. He'd ask no more questions, and he'd take whatever Laddo handed him. There would be but a few more days of this, with his battery finished.

Tom found a new sketch on his bench. It was of some sort of an electrical device, he couldn't tell just what, but the drawing was complete. All he had to do was to follow directions. He selected the proper tools, got the material he needed, and started to work.

Out of the corner of his eye he could see Laddo giving the machine a thorough check. He seemed to be going over it inch by inch, wire by wire. Now he was checking the battery. Something wrong! Laddo removed a cell and carried it into his private laboratory, where he locked himself in. Tom busied himself with his work and the time passed quickly.

IT WAS ALMOST noon when Laddo unlocked the door and came toward him. From the expression on Laddo's face, Tom prepared himself for another upbraiding.

"Garmot, what do you know about these batteries?"

"Your battery? I mean, the one in your machine?"

"Certainly. Oh, I forgot. You are the battery expert. Then perhaps you can tell me why, yesterday, each cell had a voltage of 3.65, and this morning it is down to 2.10, although they are fully charged. I tore up one cell and what do you suppose I find?"

"I don't know, doctor."

"Instead of that valuable isotopic lead we had so much trouble getting, these plates are made of ordinary battery lead. And instead of a solution of sulfuric acid in heavy water, the electrolyte is now a solution in ordinary distilled water."

Tom Garmot was silent. This was all news to him. He had assembled the batteries himself, and they were made, he knew, from ordinary commercial materials.

Laddo went on. "That is not all that is wrong. There is evidence of sabotage. You have been here over eleven months. I had confidence in your integrity, although I do not credit you with great ability. Now I am tempted to accuse you of deliberately removing the battery and tampering with the entire machine."

Tom heard, but hardly realized just what Laddo was saying. He was fascinated by Laddo's mustache. Undoubtedly it was real. He could see the separate hairs, each firmly planted in the upper lip.

"So far as I can tell, no other real harm has been done. The fact that you, or someone else, have changed wires and other parts makes little difference. They will answer the purpose. The matter of the plating, I admit, is puzzling. I was particular to have chromium plating, as it is more durable than nickel, although," and here he took some papers from his pocket and glanced through them, "the watchman's report, taken

within a week, was positive that the plating was nickel."

Tom saw the papers in Laddo's hand. On the back, fastened with a paper clip, was something cut from a newspaper. The headlines were so clear he could read it readily.

Watchman Prophecies Election Result

FDR to win all but Maine and Vermont

Strange Flier Frightens Taggart Employee.

This was about all that Tom could stand. "What is this you are reading?" he asked.

"This is that watchman's report to the superintendent. A couple of years ago he saw a machine similar to the one we are building—but I've mentioned this to you before. Don't stand there with your mouth open. Get busy and locate those missing plates. And tell me where I am to get five gallons of heavy water, with my appropriation almost used up."

Tom had read about isotopic lead, and ventured a suggestion.

"Isn't it possible for the lead you mentioned to turn into the ordinary kind, by itself?"

"Don't display your ignorance. If you know where the lead is, go get it."

TOO MUCH was enough, thought Tom. He looked Laddo in the eye. "Now get this straight," he said. "I didn't steal your lead, and I don't know where it is—if you ever had any. But if you want a better battery than the one you have, I'll lend you mine. You can call me a 'battery expert' if you want to, but I really do have a battery—and it'll beat yours a mile. I'll bring it down Monday, and you can quit wor-

rying about your isotopes."

Something of respect showed on Laddo's face. "If you've got something good, bring it up," he said. "But," his voice changed, "if this is some kind of a trick to gain time or something, forget it. I'll not only accept your resignation, but I'll recover the cost of my battery from you so quick it will make your head swim. Any jury in the world will give me damages when only two of us have the keys to this place."

Tom turned without replying and took off his overalls. Sue him, would he? Take all his money. Any jury in the world. By George, with so much of this funny stuff happening, Laddo might be right. And he'd get his new battery invention, too. He'd have to think this over. He turned to Laddo who was watching him.

"Don't worry. I'll bring my battery here at nine a. m. Monday." Laddo nodded assent and left him.

Tom changed into his street clothes and went into the hall. Then he thought of something. He returned to the laboratory door and called to Laddo.

"How strong a battery do you need?"

"About a thousand KWH to the pound."

Still dazed by the events of the morning, Tom turned and left.

On his way home it gradually came over him that he was behind the eight-ball. A thousand KWH to the pound! That was five times as powerful as he could supply. Well, he had the rest of the day to think it out in peace.

Charlie was waiting for him, and over their lunch Garmot told him everything. "No one but Laddo would dream of a battery like that," he said. "It will be hundreds of years before batteries that powerful are invented."

"Well," said Charlie, "why don't you get him one?"

"Where?"

"Just take another trip in his machine tonight. Go as far as you can into the future, buy a battery, and bring it back with you."

Tom studied the suggestion. Here was one way out. "It might be done, at that," he finally said.

This, of course, brought on more talk. The discussion continued on into the afternoon. After the morning's unusual happenings, which he vaguely associated with the preceding night's adventure, Tom had been more or less afraid of the machine, but their talk crystallized some of his ideas. He boiled them down to this.

"The long and short of it is that we aren't where we started. Yesterday, if you'd looked through files of old newspapers, you never would have found a story about that watchman. Now you can find it, because it once happened. It's like a switch on a railroad track. We were on one branch. We went back in the machine and threw a switch when we talked to the watchman. We came back on another branch."

"Can we get switched off this track in the future?" asked Charlie.

"I can't see how, but it's a chance we'll have to take."

III.

TO HAVE as many cells as possible, they hurriedly purchased the necessary materials. All Saturday evening and much of Sunday was spent assembling and charging. Sunday evening came, and the cells were loaded in the back of Tom's coupe. They waited for night. Tom hoped he wouldn't find a new lock on the laboratory door. After the way Laddo had talked, he wouldn't be surprised at anything.

They drew up to the service entrance of the laboratory. Heavily loaded with the new battery, they used the freight elevator to get to the top floor. Tom

noticed with relief that the lock seemed unchanged. He tried his key and the door opened.

Just as they entered, a blinding light flashed in their faces.

"What's that?" Charlie blinked.

"Laddo set a trap for us. There's a camera hidden somewhere with our picture in it. If I don't deliver the goods now, my name is mud."

"Then let's go," said Charlie, making for the machine.

They quickly replaced the old cells with the new ones and opened the skylight. Charlie turned out the lights and they took their seats. With new power, the machine rapidly ascended. Tom stopped it the usual five hundred feet in the air.

"Ready, Charlie?" he asked.

"Gosh, yes."

Tom pushed the time lever forward a little. Nothing happened. He pushed it farther. Still no effect. He yanked it all the way over. They still failed to experience the expected compression. Tom looked down. There was the laboratory, dim in the night, just as they had left it. But no—he recognized a car stopping in front of the building. It was Laddo's sedan. Dr. Laddo stepped out and crossed the sidewalk.

"What'll we do, Charlie? There's Laddo coming. We can't go into the future—Laddo's right. It takes five times the power we've got! And if we go back down there he'll catch us red-handed."

"Then for Pete's sake, go into the past."

It seemed the only course open to them, but what good would it do? Garmot's mind raced over possibilities and reached a decision. He eased off the power and the machine began to descend.

"Now what?" demanded Thorne. "Don't go back to the lab. If you are afraid to go into the past, edge her over close to our coupe, so we can scam."

Rapidly Tom gave instructions: The machine dropped through the open skylight and settled on the floor. Flashlight on, Tom ran to the bookcase, selected the volume he wanted, and slipped it into his pocket. Charlie had gone to the nearest workbench and seized a radio tube. Almost as soon as they had come, they had gone up again. Just as Tom pushed the time lever back, Charlie, looking down, saw the laboratory lights flash on and Laddo enter the room.

FIGHTING the compression, Tom watched the time meter. No longer was he going as far as he could; he had a definite goal in view. As that goal neared, he moved the lever back toward neutral. The pointers moved slowly. He snapped it back into its notch. In an early dawn they floated over a suburban settlement. Directly below was one of the houses.

Garmot didn't like this. He juggled the lever a trifle. It was night. Not a light showed below. Only the faint light of the stars told him they had come to rest on the stream of Time.

"Point the spotlight straight down," Tom directed.

In the faint light, Tom let the machine settle, maneuvering until it rested on a flat porch roof.

"Where are we?" whispered Charlie.

"If the meter is right, this is July, 1851. And you ought to recognize this house. You've seen it in the museum."

"You mean the old Taggart house?"

"Yes, and if he's at home, Thad Taggart is asleep in the back room, right now. This front room is his office. I hope the window isn't locked."

They had gotten out and the tin roof cracked slightly beneath their feet. Charlie reached the window first. "No screen, anyway," he whispered.

"Not in 1851," replied Tom. He

tried the sash. It slid up easily. Charlie held it while Garmot entered the room and found a window stick to hold it in place. Charlie followed.

Against the opposite wall was the famous Taggart desk. They recognized it. This entire house and all its furnishings would one day be moved bodily into the Taggart Museum. The money old Thad Taggart had earned would support the Taggart Foundation, Dr. Laddo—and build a Time machine.

Tom flashed his light over the desk top. Thaddeus Taggart had been there recently. An unfinished letter lay before them, pen and ink beside it. Tom started when he saw almost an entire sheet of postage stamps, the 5c, 1847 issue. What a find for a stamp collector! And there were almost as many of the 10c ones, beneath, both weighted down with a pair of steel shears.

"These stamps will do—we couldn't hope to find anything better. You take charge of them while I write the note." He tore a page from his note book and wrote:

DEAR MR. TAGGERT:

Travelers from the future leave for you a copy of the 1937 edition of the Electrical Handbook. We also leave a radio tube which is described in the book. We are taking your postage stamps as part payment. If you would help us, work like the devil on better storage batteries.

CAREFULLY closing the window behind them they got back in the machine. With a faint hum it rose into the night. Tom pushed the lever forward. The stars vanished. They were on their way—back to 1938.

When the machine stopped, the myriad lights of a great city shone beneath them in all directions. A huge factory building towered toward them. Tom let the machine settle on its roof.

"I suppose you call this 1938 again," ventured Charlie, looking at the city around him.

"Yes, and about 10:15 p. m. Our watches ought to be all right again."

"You don't think we can get a single minute ahead of our watches, huh?"

"That's the idea. See that clock tower." Some blocks away a great illuminated dial indicated 10:15. "Now to get down off this roof."

They walked to the parapet and looked over. There was a sheer drop of perhaps twenty stories. Charlie looked around for a penthouse. There were only a few closed scuttles.

"We'll get into trouble if we try walking down through the building," said Charlie. "It isn't familiar to us, and may be full of people. Why don't you drop the machine down into some shrubbery and hide it?"

"No," said Tom, "we couldn't find a better hiding place than right here. It's a warm night. We'll take turns sleeping, and early tomorrow, before daylight, you run me to the ground and then come back up here where you'll not be seen."

They were not sleepy, and spent most of the night whispering and wondering how things would turn out tomorrow. The story beneath them was occupied, judging from occasional sounds. It was well they had not tried to go down through the building. Eventually Charlie dropped off to sleep until awakened by Garmot.

"We'd better go now. It's beginning to get light."

They got into the machine, Charlie at the controls. He rose jerkily into the air and uncertainly descended to a fairly secluded place on the lawn.

"You know my plans—what few I have. I'll be back as soon as I can. Maybe in three hours, maybe not until later. Watch for my signal." Garmot held out his hand and Thorne clasped it tightly.

"Sure, Tom. I'll be watching." Charlie waved and began to rise. Tom

watched him until he got the signal indicating a safe landing. Then he started walking toward the tall buildings, several miles away.

Tom never forgot that journey. He felt like a country boy in New York. Later, when he recounted it to Charlie, he told him how he had tried out one of his coins on a newsboy, and had been properly bawled out for attempting to pass fake money. How the buildings all seemed to be made chiefly of plastics—of the queer little one- and two-passenger fliers, which, though not in common use, were occasionally seen dropping into parking spaces alongside automobiles. Of strangely silent autos, somehow suggestive of the old-fashioned electrics, but which raced along faster than anything Tom had ever seen before. He told Charlie of the odd words he overheard on the streets—idioms whose meanings he could not guess; of the yellow sodium lights which were used as much as the familiar neons.

IV.

IT WAS DAY when he reached the business district. He neared a sign reading "City Recreation Hall No. 7." People were entering and leaving. No one seemed to be taking tickets. In spite of his slightly odd clothing—which, by the way, no one had seemed to notice—he took a chance and entered. After all, they could do nothing worse than ask him to leave.

But Tom wasn't stopped. The place was like a huge hotel lobby. There were comfortable seats, a restaurant, a barber shop, and all the rest. A number of people were seated before a television screen, watching and listening to a news commentator. Tom wanted to watch it too, but he had other things to do.

In the advertisements of a discarded newspaper he found what he wanted. Classified under "Birdie Wijts" he

found "Power Boxes" advertised. Each dealer, true to form, had the best product obtainable. He copied some addresses in his memo book. The prices, he noted, ran into money. For an ordinary "birdie"—evidently one of the little fliers—a power box cost around \$100.00. He might need as many as ten of them.

Next to get the money. Tom hoped there were stamp collectors in these strange times. He consulted a city directory. This place was called Taggart City, he noticed. Yes, under "Postage, Antique" he found the names of stamp dealers. One address he recognized—333 Taggart Avenue. That was the street on which he had walked downtown. No. 333 should be close. The name was "Nicodemus, the Stampman. Buyer and Seller of Antique Postage." It was a little after eight. Nicodemus might be in his shop now.

No. 333 was an office building, and the directory listed Nicodemus on the ninth floor. He rode up in an elevator and went to the dealer's room. The shop impressed him favorably. A gentleman was hanging up his coat and hat. Mr. Nicodemus had evidently just arrived.

"How much are you paying for the 5c, U. S., 1847 issue—mint?" Tom asked him.

"Mint?" Nicodemus didn't quite understand.

"Not used, with gum on the back."

"Oh, you mean 'pristine,'" said Nicodemus. "So you have one, eh? What did it cost you?"

"Nothing. An heirloom."

"I hope it is not a counterfeit. A genuine copy is quite scarce. I could give you, say, fifty dollars."

Tom shook his head. Stamp dealers were probably the same here as everywhere.

"How much did you expect?" Nicodemus asked, watching him closely.

Tom had no idea what they were worth here, although he well knew, he could not get even fifty for a single, back where he came from. But he was expected to answer.

"I ought to get at least half of the selling price."

"Yes," Nicodemus admitted, "and for a genuine copy with wide margins, I'll pay you that." He consulted a price list, turning it around so Tom could see. There it was, picture and all, and the price was \$200.00.

"You'll pay me \$100.00?"

"For a good copy, yes."

"And a block of four?"

"For a block of four, I'll give you a thousand."

GARMOT AGREED to return soon with the block, and left. Alone, he carefully cut it from the sheet. After a decent interval he returned. The dealer's eyes gleamed. He had not thought such a specimen existed. He examined it carefully under a lens, and then by ultraviolet light.

"It's genuine," he announced. "I suppose you want cash."

Tom nodded. Nicodemus went to the next room and returned with a handful of bank notes. Tom examined them curiously. They were odd, but seemed to be all right. Thanking Nicodemus, he left.

After referring to his memos, he was directed to the nearest "wijit" shop. He found it much like the familiar auto supply store, full of gadgets. That was it! He smiled. "Wijits" meant "gadgets", without a doubt. An intelligent young man who knew all about power boxes waited on him. For \$800.00 he purchased fifty pounds of concentrated electricity—an eight-unit power box containing over a thousand kilowatt-hours of energy, far in excess of Laddo's requirements. With them he bought a power box handbook, describ-

ing charging, maintenance, and repairs.

"Where shall I deliver it?" the clerk asked.

Tom had been dreading the long tramp back out to the factory, lugging a heavy package. He said, "I'm to meet a friend at Taggart Avenue and Madison Street, but you can't just leave them on the sidewalk. Could I go along with them?"

"Certainly, if you don't mind riding in our delivery birdie."

This was all right with Tom and the clerk led him to a rear court where the flier was parked. Its driver moved over to make room for him and, with a push on the accelerator, they rose, much as did Laddo's machine, and flew rapidly out Taggart Avenue.

"I'm glad I'm not driving a ground car, any more," remarked the driver. "These birdies are the volts. Ten years from now and the air will be full of them."

Tom agreed. He would like to hear more, but the "birdie" was about to settle down. Selecting a parking space, the driver landed gently by the curb. Tom took his power box and got out. The driver waved him good-bye and was off.

Across the street was the factory building. The sidewalks were alive with people. Tom could see no sign of Charlie on the roof. Well, it wasn't yet nine o'clock. He'd just have to wait until Charlie happened to look down.

Tom was hungry, and when he saw the restaurant on the corner, he went in. He ordered sandwiches and coffee for himself and Charlie. The waiter brought Charlie's coffee in a container made of white, celluloidlike, material, and his sandwiches came covered with a transparent wrapping that must have been sprayed on. The food tasted good.

Refreshed, Tom crossed the street and stopped on the sidewalk near his rendezvous. He looked up. Was that

Charlie's head leaning over the parapet? He pointed his flashlight up and spelled out, "O. K. Land in the bushes on my right."

Back came the answer, "Coming."

THE LAWN was perfectly kept, and Tom stayed off of it. They might arrest him for walking on the grass. A few uniformed men were in evidence. He stood on the sidewalk, hoping his upward gaze would not attract unfavorable attention.

Down dropped the machine, so fast that Tom thought it was surely out of control. But Charlie slowed up at the last minute and landed with a jolt, right in the middle of a beautiful bed of flowers. Lugging the power box, Tom raced across the lawn toward him. Someone yelled. A whistle blew. He saw two men running toward him. He reached the machine, and up they went.

"Lord, Tom. I'm glad you're back. I see you got your battery."

"Yes, I got it. Say, how much power have you got?" for the machine was now climbing very slowly.

"Not much, I'm afraid. Gosh, I hope we can at least make the roof." Charlie looked anxiously at the building beside which they were barely rising. Both breathed a sigh of relief as the machine topped the parapet and slipped gently across. It landed with a thump as Tom reached over and cut off the power. He jumped from the machine and looked over the parapet.

"We'll have to work fast. There's a big commotion down there. The police will be up here in a minute."

"I shouldn't have practiced after you left—used up too much power. What do you want me to do? Change batteries?"

"Yes. Don't bother to take out the old one. Here. Unscrew that nut and connect this cable. I'll look after the other. Hurry."

They heard a shout. One of the hatches was open and a uniformed policeman was rising out of it. Tom saw him, and reached for the instrument board. As the policeman came toward them, everything went black. Tom had thrown the Time lever all the way over, to drain the last remaining erg of energy from the exhausted battery. The pointer crept slowly around, gradually coming to a stop. Tom snapped off the feeble current.

"Where are we now?" asked Charlie.

"Yesterday afternoon."

The sun was low in the west. Charlie eyed the hatchway doubtfully, but it was tightly closed.

Working carefully now, they installed the power box. The machine was ready for action again.

"Did you get your sandwiches, Charlie?" Tom asked.

"What sandwiches?"

Tom looked all about and laughed. "I guess they'll be on the lawn there tomorrow morning. Guess they were left out in the rush. Probably the police will eat them. You'll have to wait for your breakfast."

V.

WITH A LAST look at the city around them, Tom elevated the machine, pulled back the lever, and they were off. Carefully watching the dials, Tom stopped the machine again in 1851. It was daylight. He ran back a few hours. Night. They descended to the porch roof, this time landing nearer the end.

"Now we must recover the book and all, and return these stamps," said Tom.

"Yes, I know that's your plan," said Charlie. "Seems a pity, though. Think what a good time Taggart might have with them. And you surely aren't going to give these stamps back. Just think how they would look in your collection."

"We've got to, to get back home. We must arrange things here so the future

will go on practically unchanged. I'd like to keep the stamps, but we can't risk it. He may not miss the four I sold, but he's bound to miss two sheets."

They walked softly to the window. By Tom's light they could see the desk, but there was no book lying on it—only the half written letter. "We're early," said Tom. Then, as realization came to him he muttered, "Well I'll be——"

Charlie looked at him inquiringly.

Garmot went on. "If we wait here we'll see *ourselves* land and leave the book."

"And I can go up and speak to myself?"

"Not if I know it, you can't. If you do, the whole future may be changed. You'll hide with me over there, behind the bay window, and we'll carry the machine there, too. It's not too heavy for both of us."

This was quickly done. They waited in the shadows. Whispering, Charlie asked to see the stamps. "I'm not a collector, but I would like to have a look at them if they're worth a hundred dollars apiece." Tom handed them to him. Under the protection of his coat, by flashlight, Charlie had his look. Tom stood peering into the sky, all attention.

There was a faint whine overhead. "Lights out, Charlie. Here they come," Garmot whispered.

Down came a machine. Out of it stepped a man and a boy of 18. From the shadows, Garmot and Charlie watched, scarcely breathing. The two visitors raised the window and entered.

Charlie chuckled. He turned to Tom. "Do you think we were here watching when we came the first time?"

"I don't know. Maybe we were."

Before Tom could stop him, Charlie tiptoed forward and peered into the window. He returned.

"It's us, all right. You're writing the note. They'll be out now."

And out they came. Tom noticed that they left the window-stick outside.

Well, he could correct that. The two men got into their machine and rose swiftly. Suddenly the sound of their motor stopped. They had gone into the future.

Tom breathed a sigh of relief. "Come," he said to Charlie, "let's do this right. Give me the stamps."

Carefully he raised the window. Charlie held it for him while he stepped through. After putting the window-stick in its place, he crossed the room and secured the handbook, the radio tube, and the note. He carefully replaced the stamps as near their original position as he could remember. Then he came out. After silently closing the sash, the two pushed the machine out to clear the eaves and got aboard.

GARMOT let the machine stop itself. The sudden burst of sunshine almost blinded them. Below lay the familiar laboratory, its skylight open.

Tom looked down. "There's our friend Laddo waiting for us. Won't he have a fit in about two minutes?" He guided the machine toward the opening. Gently they settled to the floor.

Laddo strode rapidly toward them. "Well, here you are at last, Garmot. What have you got to say?"

"I've got some batteries for you that will knock your eye out," said Garmot.

After his first few words, Laddo demanded a full and orderly explanation. For perhaps an hour he listened to Tom's story, with occasional comments from Charlie. When it was finished he began questioning.

"Excuse me, gentlemen," Charlie ventured. "I haven't had my breakfast. You fellows just go on. I'll run out and get something to eat." Garmot nodded assent and Charlie left. When he returned an hour later he found the two still talking.

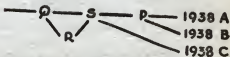
"You're right, Garmot, in your track theory," Laddo was saying. "If you tamper with the past you cannot expect

to find the present unchanged. As you say, time seems to be like a railway track on which we travel. When, in my machine, you go back into the past and do the least thing, you change the whole future from then on; and when you then go into that future, you find it different. Let's see, now. What tracks have you been on?"

"You started from 1938A. That was when you first came here to try out your battery for elevating the machine. You inadvertently—how about that, young man?—went back to point P in 1936 and talked to the watchman. He has, by the way, died since then. This threw a switch and you returned to 1938B. All that is clear enough."

"That's just the way Tom explained it to me," Charlie put in.

"And to me, too. I am merely clarifying it in my own mind. Now, to proceed, last night you got into the machine and went back to Q, in 1851. Leaving that handbook threw another switch, and you went forward to 1938C, where you bought the power box a few hours ago. You then returned to Q and hid there until you removed the book at point R. This threw another switch and put you back on the B track at point S. You returned to 1938B, and that's where you are now.



"I WANT TO congratulate you, Garmot, on your cleverness in making over a future to meet your requirements. But I have a question that needs clearing up. This is embarrassing, but I gather from some of your remarks that you feared I would sue you and take your invention from you. You hint that you have considered me a hard and soulless fellow. Am I right?"

Tom's face reddened. He certainly

did not want to reopen a sore spot that seemed to be healing. But Charlie had no such inhibitions.

"You're right, Dr. Laddo. And I don't blame him. He told me how you talked to him—what you said when you accused him of stealing that isotopic lead."

"What were the exact words I used?"

"You told him any jury on earth would give you damages when only you two had the keys to the laboratory."

Laddo was silent for a long time. Garmot wondered if there would be another outburst.

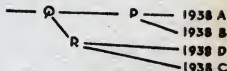
"I was wrong," he said finally. "You are on still another track."

"What's that?" said Tom.

"I mean you are in 1938D."

"When you went back to Taggart's house the second time, you failed to leave everything just as it had been before your first visit. You failed to return all of his stamps, for you sold some of them, remember? Taggart missed those stamps, and accused one of his associates of stealing them. Later, he found that this person could not possibly have been there at the time. This made a deep impression on him, and years later, he wrote a short article about it. Yonder is a copy, framed." Laddo pointed to the laboratory wall. "That little sermon deeply affected me, too. I admire old Thaddeus Taggart's character, and have

always tried to follow his precepts. So you see, at R, by recovering the book but not returning all of the stamps, you threw another switch, and you are now in 1938D. I hope you like it here—for I see no way for you to go back and undo everything."



"I don't want to," said Tom. "This suits me better."

All of their questions were not answered. Laddo was stumped when Charlie asked him what would have happened had he and Tom encountered themselves on that second visit to the porch roof.

"That's a thing one would have to experiment with to find the answer," he said.

WHEN Dr. Laddo and his machine disappeared several months later, Tom and Charlie didn't worry much. They knew he had gone wandering into the past. Garmot hoped he had found a world to his liking, on another track—and rather suspected he might have gone to leave a book on functional equations on some Newton's desk.

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THE COMMAND

by L. Sprague de Camp

*Meet Johnny Black—a gentleman—
scholar—and a frightful enemy!*



JOHNNY BLACK took Volume 5 of the *Britannica* off the library shelf and opened it to "Chemistry". He adjusted the elastic that held his spectacles and found the place where he had left off last time. He worried his

way through a few sentences, and then thought sadly that it was no use; he'd have to get Professor Methuen to explain some more before he could go on. And he did badly want to know all about chemistry, which had made him

big one. And Johnny, whose ruling passion was curiosity, was determined to find out all about the process.

He turned the pages carefully with his paw—he'd tried using his tongue once, but had cut it on the paper, and then Methuen had come in and given him hell for wetting the pages—the more so, since Johnny was at that moment indulging in his secret vice, and the Professor had visions of Johnny's drooling tobacco-juice over his expensive books.

Johnny read the articles on "Chess" and "Chicago". His thirst for knowledge satisfied for the nonce, he put the book away, stowed his spectacles in the case attached to his collar, and ambled out.

Outside, the island of St. Croix sweltered under a Caribbean sun. The blueness of the sky and the greenness of the hills were lost on Johnny, who, like all bears, was color-blind. But he wished that his bear's eyesight were keen enough to make out the boats in Fredericksted harbor. Professor Methuen could see them easily from the Biological Station, even without his glasses. His eyesight, together with his lack of fingers to manipulate, and articulatable vocal organs to speak, were Johnny's chief grievances against things in general. He sometimes wished that, if he had to be an animal with a hominoid brain, he were at least an ape—like McGinty, the chimpanzee, over there in the cages.

Johnny wondered about McGinty—he hadn't heard a peep out of him all morning, whereas it was usually the old ape's habit to shriek and throw things at everybody who went by. Curious, the bear shuffled across to the cages. The monkeys chattered at him, as usual, but no sound came from McGinty's cage. Standing up, Johnny saw that the chimp was sitting with his back to the wall and staring blankly. Johnny wondered whether he were dead, until he noticed that McGinty was breathing. Johnny tried growling a little; the ape's eyes

swung at the sound, and his limbs stirred, but he did not get up. He must be pretty sick, thought Johnny, who wondered whether he should try to drag one of the scientists over. But then his rather self-centered little soul comforted itself with the thought that Pablo would be around shortly with the ape's dinner, and would report McGinty's behavior.

THINKING of dinner reminded Johnny that it was high time he heard Honoria's bell to summon the biologists of the Station to lunch. But no bell came. The place seemed unnaturally quiet. The only sounds were those from the bird and monkey cages, and the *put-put-put* of a stationary engine from Bemis' place, over on the edge of the Station grounds. Johnny wondered what the eccentric botanist was up to. He knew that the other biologists didn't like Bemis; he'd heard Methuen make remarks about men—especially little plump men—who swaggered around in riding boots when there wasn't a horse near the Station. Bemis really didn't belong to the Station, but his financial inducements had led the treasurer to let him put up his house and laboratory there. With Johnny, to wonder was to investigate and he almost started for the place, but remembered the fuss Bemis had made last time.

Well, he could still investigate the reason for Honoria's delinquency. He trotted over to the kitchen and put his yellowish muzzle in the door. He didn't go farther, remembering the cook's unreasonable attitude toward bears in her kitchen. There was a smell of burning food, and on a chair by the window sat Honoria, black and mountainous as ever, looking at nothing. A slight "woof!" from Johnny brought no more reaction than he had gotten from McGinty.

This was definitely alarming. Johnny set out to find Methuen. The Professor wasn't in the social room, but others

were. Dr. Breuker, world-famous authority on the psychology of speech, sat in one easy-chair, a newspaper across his lap. He didn't move when Johnny sniffed at his leg, and when the bear nipped his ankle he merely pulled the leg back a little. He had dropped a lighted cigarette on the rug, where it had burned a large hole before going out. Doctors Markush and Ryerson, and Ryerson's wife, were there too—all sitting like so many statues. Mrs. Ryerson held a phonograph record—probably one of those dance tunes she liked.

Johnny hunted some more for his lord, and eventually found the lanky Methuen, clad in underwear, lying on his bed and staring at the ceiling. He didn't look sick—his breathing was regular—but he didn't move unless prodded or nipped. Johnny's efforts to arouse him finally caused him to get off the bed and wander dreamily across the room, where he sat down and gazed into space.

An hour later Johnny gave up trying to get sensible action out of the assorted scientists of the Biological Station, and went outside to think. He ordinarily enjoyed thinking, but this time there didn't seem to be enough facts to go on. What ought he to do? He could take the telephone off its stand, but he couldn't talk into it to call a physician. If he went down to Frederiksted to drag one up by main force, he'd probably get shot for his pains.

HAPPENING to glance toward Bemis, he was surprised to see something round rise into the sky, slowly dwindle, and vanish in the sky. From his reading he guessed that this was a small balloon; he'd heard that Bemis was doing some sort of botanical experiment that involved the use of balloons. Another sphere followed the first, and then another, until they made a continuous procession dwindling into nothingness.

That was too much for Johnny; he *had* to find out why anyone should want

to fill the heavens with balloons a yard in diameter. Besides, he might be able to get Bemis to come over to the Station and see about the entranced staff.

To one side of the Bemis house he found a truck, a lot of machinery, and two strange men. There was a huge pile of unfilled balloons, and the men were taking them one at a time, inflating them from a nozzle projecting from the machinery, and releasing them. To the bottom of each balloon a small box was attached.

One man saw Johnny, said "Cheez!" and felt for his pistol-holster. Johnny stood up and gravely extended his right paw. He'd found that this was a good gesture to reassure people who were alarmed by his sudden appearance—not because Johnny cared whether they were alarmed, but because they sometimes carried guns, and were dangerous if cornered or surprised.

The man shouted, "Get otta deh, youse!"

Johnny, puzzled, opened his mouth and said "Wok?" His friends knew that this meant "What did you say?" or "What's going on here?" But the man, instead of sensibly explaining things, jerked out his pistol and fired.

Johnny felt a stunning blow and saw sparks as the .38 slug glanced off his thick skull. The next instant, the gravel of the driveway flew as he streaked for the gate. He could make 35 m.p.h. in a sprint and 30 for miles at a time, and now he was going all out.

Back at the station, he found a bathroom mirror and inspected the two-inch gash in his forehead. It wasn't a serious wound, though the impact had given him a slight headache. He couldn't bandage it. But he could and did turn on the faucet and hold his head under it, mop the wound with a towel, take down the iodine bottle, extract the stopper with his teeth, and, holding the bottle between his paws, pour a few drops on the wound. The sting made him

wince and spill some of the solution on the floor, where, he reflected, Methuen would find it and give him hell.

Then he went out, keeping a watchful eye for the tough individuals at Bemis', and thought some more. Somehow, he suspected, these men, the balloons, and the trancelike state of the people at the Station were all connected. Had Bemis gone into a trance too? Or was he the real author of these developments? Johnny would have liked to investigate some more, but he had the strongest aversion to being shot at.

IT OCCURRED to him that if he wanted to take advantage of the scientists' malady he'd better do so while the doing was good, and he made for the kitchen. There he had a glorious time, for he had five effective natural can-openers on each foot. He was pouring the contents of a can of peaches down his throat, when a noise outside brought him to the window. He saw the truck that had been at Bemis' back up and the two tough individuals get out. Johnny slipped noiselessly into the dining room and listened through the door, tensing himself to bolt if the intruders came his way.

He heard the outside kitchen door slam, and the voice of the man who had shot him: "What's ya name, huh?"

The inert Honoria, still sitting in her chair, answered tonelessly, "Honoria Velez."

"O. K., Honoria, you help us carry some of dis food out to the truck, see? Cheez, Smoke, lookit de mess. Dat beh's been around here. If you see him, plug him. Beh steaks is good eating, I hoid."

The other man mumbled something, and Johnny could hear the slapping of Honoria's slippers as she moved about, and presently the opening of the outside kitchen door. Still shuddering at the idea of becoming a steak, he pushed his door open a crack. Through the screen of the outside door he could see Honoria,

arms full of provisions, docilely obeying commands and piling the cans and bags in the truck. The men sat on their running board and smoked while Honoria, like one hypnotized, made several trips back to the kitchen. When they said "Dat's all," she sat down on the kitchen steps and relapsed into her former state. The truck drove off.

Johnny hurried out and made for the clump of trees on the end of the Station's property opposite Bemis' house: The clump crowned a little hill, making it both a good hiding place and a vantage point. He thought, evidently the Station wasn't big enough for him and the strange men both, if they were going to corner the food supply and kill him on sight. Then he considered Honoria's actions. The negress, normally a strong-minded person of granite stubbornness, had carried out every order without a peep. Evidently the disease or whatever it was didn't affect a person mentally or physically, except that it deprived the victim of all initiative and will-power. Honoria had remembered her own name and understood orders well enough. Johnny wondered why he hadn't been affected also; then, remembering the chimpanzee, concluded that it was probably specific to the higher anthropoids.

He watched more balloons rise, and saw two men come out of the bungalow and talk to the inflators. One stocky figure Johnny was sure was Bemis. If that was so, the botanist must be the master mind of the gang, and Johnny had at least four enemies to deal with. How? He didn't know. Well, he could at least dispose of the remaining food in the Station kitchen before the plug-uglies got it.

HE WENT DOWN and made a quart of coffee, which he could do easily enough because the pilot light of the gas stove had been left on. He poured it into a frying pan to cool, and lapped it up, simultaneously polishing off a

whole loaf of bread.

Back in his hideaway he had difficulty sleeping; the coffee stimulated his mind, and plans for attacking the bungalow swarmed into it in clouds, until he almost felt like raiding it right then. But he didn't, knowing that his eyesight was especially poor at night, and suspecting that all four of the enemy would be in.

He awoke at sunrise, and watched the house until he saw the two tough ones come out and go to work on the balloons, and heard the little engine start its *put-put-put*. Making a long detour, he sneaked up from the opposite side and crawled under the house, which, like most Virgin Island bungalows, had no cellar. He crept around until the scrape of feet on the thin floor overhead told him he was under the men within. He heard Bemis' voice: "—Al and Shorty, and now those fools are caught in Havana with no way of getting down here, because transportation will be tied up all over the Caribbean by now."

Another voice, British, answered: "I suppose that in time it'll occur to them to go up to the owner of a boat or plane, and simply tell the chap to bring them here. That's the only thing for them to do, with everybody in Cuba under the influence of the molds by now, what? How many more balloons should we send up?"

"All we have," replied Bemis.

"But I say, don't you think we ought to keep some in reserve? It wouldn't do to have to spend the rest of our lives sending spores up into the stratosphere, in the hope that the cosmics will give us another mutation like this one——"

"I said all the balloons, not all the spores, Forney. I have plenty of those in reserve, and I'm growing more from my molds all the time. Anyway, suppose we did run out before the whole world was affected—which it will be in a few weeks? There wasn't a chance in a million of that first mutation—yet it happened. That's how I know it was

a sign from above, that I was chosen to lead the world out of its errors and confusions, which I shall do! God gave me this power over the world, and He will not fail me!"

So, thought Johnny, his mind working furiously, that was it! He knew that Bemis was an expert on molds. The botanist must have sent a load up into the stratosphere where the cosmic rays could work on them, and one of the mutations thereby produced had the property of attacking the human brain, when the spores were inhaled and got at the olfactory nerve-endings, in such a way as to destroy all will-power. And now Bemis was broadcasting these spores all over the world, after which he would take charge of the Earth, ordering the inhabitants thereof to do whatever he wished. Since he and his assistants had not been affected, there must be an antidote or preventative of some sort. Probably Bemis kept a supply handy. If there were some way of forcing Bemis to tell where it was—if, for instance, he could tie him up and write out a message demanding the information—— But that wouldn't be practical. He'd have to settle with the gang first, and trust to luck to find the antidote.

One of the men working on the balloons spoke: "Ten o'clock, Bert. Time to go for the mail."

"Won't be no mail, you dope. Everybody in Frederiksted's sitting around like he was hopped."

"Yeah, that's so. But we ought to start organizing 'em, before they all croak of starvation. We gotta have somebody to work for us."

"All right, smart guy, you go ahead and organize; I'll take a minute off for a smoke. S'pose you try to get the telephone soivice woiking again."

Johnny watched one pair of booted legs disappear into the truck, which presently rolled out of the driveway. The other pair of legs came over to the front steps and sat down. Johnny remembered

a tree on the other side of the house, whose trunk passed close to the eaves.

Four minutes later he padded silently across the roof and looked down on the smoker. Bert threw away his cigarette butt and stood up. Instantly Johnny's 500 steel-muscled pounds landed on his back and flung him prone. Before he could fill his lungs to shout, the bear's paw landed with a *pop* on the side of his head. Bert quivered and subsided, his skull having acquired a peculiarly lop-sided appearance.

Johnny listened. The house was quiet. But the man called Smoke would be coming back in the truck. . . . Johnny quickly dragged the corpse under the house. Then he cautiously opened the front screen door with his paws and stole in, holding his claws up so they wouldn't click against the floor. He located the room from which Bemis' voice had come. He could hear that voice, with its exaggerated oratorical resonance, wafting through the door now.

HE PUSHED the door open slowly. The room was the botanist's laboratory, and was full of flowerpots, glass cases of plants, and chemical apparatus. Bemis and a young man, evidently the Englishman, were sitting at the far end talking animatedly.

Johnny was halfway across the room before they saw him. They jumped up; Forney cried "Good Gad!" Bemis gave one awful shriek as Johnny's right paw, with a swift scooping motion, operated on his abdomen in much the way that a patent ice-cream scoop works in its normal medium. Bemis, now quite a horrible sight, tried to walk, then to crawl, then slowly sank into a pool of his own blood.

Forney, staring at Bemis' trailing guts, snatched up a chair to fend off Johnny, as he had seen circus chappies do with lions. Johnny, however, was

not a lion. Johnny rose on his hind legs and batted the chair across the room, where it came to rest with a crash of glass. Forney broke for the door, but Johnny was on his back before he had gone three steps. . . .

Johnny wondered how to dispose of Smoke when he returned. Perhaps if he hid behind the door and pounced on him as he came in, he could finish him before the man could get his gun out. Johnny had a healthy dread of stopping another bullet. Then he noticed four automatic rifles in the umbrella stand in the hall. Johnny was a good shot with a rifle—or at least as good as his eyesight permitted. He partly opened the breech of one gun to assure himself that it was loaded, and found a window that commanded the driveway. When Smoke returned and got out of the truck, he never knew what hit him.

Johnny set out to find the antidote. Bemis should have kept some around, perhaps in his desk. The desk was locked, but, although made of sheet steel, it wasn't designed to keep out a determined and resourceful bear. Johnny hooked his claws under the lowest drawer, braced himself, and heaved. The steel bent, and the drawer came out with a rending sound. The others responded in turn. In the last one he found a biggish squat bottle whose label he made out, with his spectacles, to read "Potassium iodide". There were also two hypodermic syringes.

Probably this was the antidote, and worked by injection. But how was he to work it? He carefully extracted the bottle-cork with his teeth, and tried to fill one of the hypodermics. By holding the barrel of the device between his paws, and working the plunger with his mouth, he at last succeeded.

Taking the syringe in his mouth, he trotted back to the Station. He found the underwear-clad Methuen in the kitchen, dreamily eating such scraps as had been left by his and the plug-uglies'

raids. Breuker, the psychologist, and Dr. Bouvet, the Haitian negro bacteriologist, were engaged likewise. Evidently the pangs of hunger caused them to wander around until they found something edible, and their feeble instincts enabled them to eat if without having to be told to do so. Beyond that they were utterly helpless without orders, and would sit like vegetables until they starved.

Johnny tried to inject the solution into Methuen's calf, holding the syringe crosswise in his teeth and pushing the plunger with one paw. But at the prick of the needle the man instinctively jerked away. Johnny tried again and again. He finally grabbed Methuen and held him down while he applied the needle, but the man squirmed so that the syringe broke.

A DISCOURAGED black bear cleaned up the broken glass. Except possibly for the missing Al and Shorty, he would soon be the only thinking being left on Earth with any initiative at all. He fervently hoped that Al and Shorty were still in Cuba—preferably six feet underground. He didn't care so much what happened to the human race, which contained so many vicious specimens. But he did have a certain affection for his cadaverous and whimsical boss, Methuen. And, more important from his point of view, he didn't like the idea of spending the rest of his life rustling his own food like a wild bear. Such an existence would be much too stupid for a bear of his intelligence. He would, of course, have access to the Station library, but there wouldn't be anybody to explain the hard parts of chemistry and the other sciences to him when he got stuck.

He returned to Bemis' and brought back both the bottle and the remaining hypodermic, which he filled as he had the previous one. He tried inserting the needle very gently into Professor

Methuen, but the biologist still jerked away. Johnny didn't dare try any rough stuff for fear of breaking his only remaining syringe. He tried the same tactics with Breuker and Bouvet, with no better results. He tried it on Honoria, dozing on the kitchen steps. But she awoke instantly and pulled away, rubbing the spot where she had been pricked.

Johnny wondered what to try next. He considered knocking one of the men unconscious and injecting him; but, no, he didn't know how hard to hit to stun without killing. He knew that if he really swung on one of them he could crack his skull like an eggshell.

He waddled out to the garage and got a coil of rope, with which he attempted to tie up the again-sleeping Honoria. Having only paws and teeth to work with, he got himself more tangled in the rope than the cook, who awoke and rid herself of the coils without difficulty.

He sat down to think. There didn't seem to be any way that he could inject the solution. But in their present state the human beings would do anything they were told. If somebody ordered one to pick up the hypodermic and inject himself, he'd do it. . . .

Johnny laid the syringe in front of Methuen, and tried to tell him what to do. But he couldn't talk—his attempt to say "Pick up the syringe" came out as "Fee—feek opp feef—feef." The Professor stared blankly and looked away. Sign-language was no more successful.

Johnny gave up and put the bottle and syringe on a high shelf where the men couldn't get at them. He wandered around, hoping that something would give him an idea. In Ryerson's room he saw a typewriter, and thought he had it. He couldn't handle a pencil, but he could operate one of these machines after a fashion. The chair creaked alarmingly under his weight, but held together. He took a piece of typewriter

paper between his lips, dangled it over the machine, and turned the platen with both paws until he caught the paper in it. The paper was in crooked, but that couldn't be helped. He'd have preferred to write in Spanish because it was easy to spell, but Spanish wasn't the native tongue of any of the men at the Station, and he didn't want to strain their faculties, so English it would have to be. Using one claw at a time, he slowly tapped out: "PICK UP SYRINGE AND INJECT SOLUTION INTO YOUR UPPER ARM". The spelling of "syringe" didn't look right, but he couldn't be bothered with that now.

TAKING the paper in his mouth, he shuffled back to the kitchen. This time he put the syringe in front of Methuen, squalled to attract his attention, and dangled the paper in front of his eyes. But the biologist glanced only briefly at it and looked away. Growling with vexation, Johnny pushed the syringe out of harm's way and tried to force Methuen to read. But the scientist merely squirmed in his grasp and paid no attention to the paper. The longer he was held the harder he tried to escape. When the bear released him, he walked across the room and settled into his trance again.

Giving up for the time being, Johnny put away the syringe and made himself another quart of coffee. It was weak stuff, as there wasn't much of the raw material left. But maybe it would give him an idea. Then he went out and walked around in the twilight, thinking furiously. It seemed absurd—even his little bear's sense of humor realized that—that the spell could be broken by a simple command, that he alone in the whole world knew the command, and that he had no way of giving it. He wondered what would happen if he never did find a way out. Would the whole human race simply die off, leaving him

the only intelligent creature on Earth? Of course such an event would have its advantages, but he feared that it would be a dull life. He could take a boat from the harbor and head for the mainland, and then hike north to Mexico where he would find others of his species. But he wasn't sure that they'd be congenial company; they might, resenting his strangeness, even kill him. No, that idea wouldn't do, yet.

The Station's animals, unfed for two days, were noisy in their cages. Johnny slept badly, and awoke well before dawn. He thought he'd had an idea, but couldn't remember. . . .

Wait, it had something to do with Breuker. He was a specialist on the psychology of speech, wasn't he? He did things with a portable phonograph recording apparatus; Johnny had seen him catching McGinty's yells. He went up to Breuker's room. Sure enough, there was the machine. Johnny opened it up, and spent the next two hours figuring out how it worked. He could crank the motor easily enough, and with some patience learned to operate the switches. He finally adjusted the thing for recording, started the motor, and bawled "Wa-a-a-a-a-ah!" into it. He stopped the machine, threw the playback switch, set the needle in the outer groove of the aluminum disk, and started it. For a few seconds it scraped quietly, then yelled "Wa-a-a-a-a-ah!" at him. Johnny squealed with pleasure.

HE WAS ON the track of something, but he didn't quite know what. A phonograph record of his cry would be no more effective in commanding the men than the original of that cry. Well, Breuker must have a collection of records. After some hunting, Johnny found them in a set of cases that looked like letter files. He leafed through them and read the labels. "Bird-cries: Red-and-Green Macaw, Cockatoo, Mayana." That was no help. "Infant Babble: 6—9

months." Also out. "Lancashire Dialect." He tried this disk, and listened to a monologue about a little boy who was swallowed by a lion. From his experience with little boys Johnny thought that a good idea, but there was nothing in the record that would be of use.

The next was labeled "American Speech Series, No. 72-B, Lincoln County, Missouri." It started off: "Once there was a young rat who couldn't make up his mind. Whenever the other rats asked him if he'd like to come out with them, he'd answer, 'I don't know.' And when they said, 'Wouldn't you like to stop at home?' he wouldn't say yes or no either; he'd always shirk making a choice. One day his aunt said to him, 'Now look here! No one will ever care for you if you carry on like this. . . .'"

The record ground on, but Johnny's mind was made up. If he could get it to say "Now look here!" to Methuen, his problem ought to be solved. It wouldn't do any good to play the whole record, as those three words didn't stand out from the rest of the discourse. If he could make a separate record of just those words. . . .

But how could he, when there was only one machine? He needed two—one to play the record and one to record the desired words. He squalled with exasperation. To be licked after he'd gotten this far! He felt like heaving the machine out the window. At least it would make a beautiful crash.

Like a flash the solution came to him. He closed the recorder and carried it down to the social room, where there was a small phonograph used by the scientists for their amusement. He put the American Speech disk on this machine, put a blank disk on the recorder, and started the phonograph, with a claw on the switch of the recorder to start it at the right instant.

Two hours and several ruined disks

later, he had what he wanted. He took the recorder to the kitchen, set it up, laid the syringe in front of Methuen, and started the machine. It purred and scraped for ten seconds, and then said sharply, "Now look here! Now look here! Now look here!" and resumed its scraping. Methuen's eyes snapped back into focus and he looked intently in front of him—at the sheet of paper with a single line of typing across it that Johnny dangled before his eyes. He read the words, and without a flicker of emotion picked up the syringe and jabbed the needle into his biceps.

Johnny shut off the machine. He'd have to wait now to see whether the solution took effect. As the minutes passed, he had an awful feeling that maybe it wasn't the antidote after all. A half-hour later, Methuen passed a hand across his forehead. His first words were barely audible, but grew louder like a radio set warning up: "What in Heaven's name happened to us, Johnny? I remember everything that's taken place in the last three days, but during that time I didn't seem to have any desires—not enough will of my own to speak, even."

Johnny beckoned, and headed for Ryerson's room and the typewriter. Methuen, who knew his Johnny, inserted a sheet of paper for him. Time passed, and Methuen said, "I see now. What a sweet setup for a would-be dictator! The whole world obeys his orders implicitly; all he has to do is select subordinates and tell them what to order the others to do. Of course the antidote was potassium iodide; that's the standard fungicide, and it cleared the mold out of my head in a hurry. Come on, old-timer, we've got work to do. The first thing is to get the other men around here to inject themselves. Think of it, Johnny, a bear saving the world! After this you can chew all the tobacco you want. I'll even try to get a female bear for you and inject her brain the

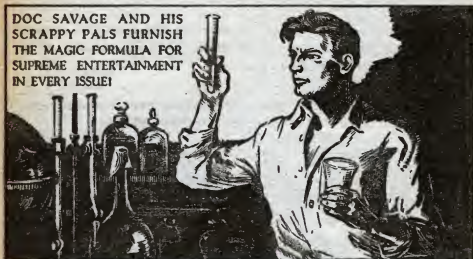
way I did yours, so that you can have some company worthy of you."

A week later everyone on St. Croix had been treated, and men had been sent off to the mainland and the other Caribbean islands to carry on the work.

Johnny Black, finding little to arouse his curiosity around the nearly deserted

Biological Station, shuffled into the library. He took Volume 5 of the *Britannica*, opened it to "Chemistry", and set to work again. He hoped that Methuen would get back in a month or so, and would find time to explain the hard parts to him; but meanwhile he'd have to wade through it as best he could.

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WHY ROCKETS DON'T FLY

By Peter van Dresser

Many a rocket has taken off from Earth and flown to the planets—powered by mathematics and carrying a pay-load of algebraic symbols. If the rocket is good—really effective—a possible, practicable weapon against distance—why hasn't it flown? The former editor of the Journal of the American Rocket Society gives the answer. The answer is neither logical nor scientific—but it's very effective. Money.

FIFTEEN years ago, Dr. Hermann Oberth, a shy Roumanian mathematician, published an amazing volume under the title *Die Rakete zu den Planetenraumen*—The Rocket to Interplanetary Space—a volume which is probably the most brilliant theoretical attack on the law of gravitation that any man has ever produced. Using all the power of modern mathematical physics, Dr. Oberth analyzed the rocket as a machine for rising to tremendous heights above the Earth's atmosphere, for navigating the vacuum of outer space, for hurtling across the unthinkable voids separating Earth from other members of the Solar System.

Every phase of this titanic engineering problem which was vulnerable to theoretical attack, this scientist bombarded with an overpowering barrage of integral signs, algebraic symbols, graphs and computations. The rocket as a heat-engine, the fuels with which it could be powered, its design and construction, the materials of which it should be built, the means of guiding and stabilizing it, the air-resistance it would meet, the trajectories and orbits it should follow—these and a hundred other lesser details

he labored over exhaustively. He laid down the principles governing super-rockets of assorted sizes, from a sounding rocket nine feet long capable of ascending fifty miles into the stratosphere, to a gigantic three-stage alcohol-hydrogen spaceship capable of escaping permanently from the clutch of Earthly gravitation.

Shortly after this staggering volume was published—and probably fewer scientists have followed entirely through its maze of mathematics than are supposed to have comprehended Einstein's master work—other studies not quite so comprehensive were published by other scientists and engineers. Interplanetary navigation by rocket, in the course of a few years, suddenly acquired a weighty technical literature.

Fifteen years have passed since this opening salvo of the "attack on the last frontier". What progress is there to report? Surely the first exploring projectile of the future space-armada has at least dipped its streamlined nose into the temperatureless void of outer space?

Alas, no. In spite of all the newspaper stories of rocket experimenting in Germany, Russia, France, Japan, etc.,

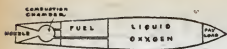


Fig. 1. The classical diagram of the load-bearing rocket. Practically the only load carried by such rockets so far has been mathematical theory.

etc., in spite of newsreels of fire-breathing rocket cars and sleds, in spite of innumerable feature articles in Sunday supplements and magazines of popular science, no rocket has yet shot higher into the sky than somewhere around a mile and a half, yet—

Even kites have soared higher than that!

What, the interested bystander justly asks, is wrong? Why can't a machine which, in theory, could reach the Moon, be made at least to rise a dozen miles and puncture the bottom of the stratosphere?

This question is not quite so obvious as it seems. The hidden factor in it that must be pointed out is this: The average man who asks it has in the back of his mind a vague picture of numerous scientists and technicians working in laboratories and machine-shops all over the world, feverishly building and testing super-rockets.

If this were so, his question would be justified. But it is not so. Actual, serious, intelligent research work on rockets, backed by even modest resources, has been very scarce indeed.

Americans, always willing to believe that "foreign scientists" are somehow more skillful and enterprising than our own, have accepted at their face value newspaper accounts of such research going on abroad. But a little investigation reveals a high percentage of moonshine in the reports. Let us attempt a quick country-by-country survey of the "state of the art" of rocket engineering (as

distinguished from the art of theorizing about space-flight).

RUSSIA, most prolific source of rumors about giant stratosphere rockets under construction, has nothing tangible to offer save mounds of paper-bound volumes full of highly dubious "scientific" discussions of interplanetary flight. (Although recently the Ossoaviakhim, the Soviet Central Committee on Aviation, has published one sound mathematical study of rocket propulsion.)

England, home of the active British Interplanetary Society, has no record of any experimental work with liquid-fuel rockets to date, if one excepts the vaguest of rumors that Grindell-Mathews, the inventor of the alleged death-ray, is at work in a "secret laboratory". The British Interplanetary Society, however, is planning a program of active research.

France, in spite of the brilliant theoretical studies of Robert Esnault-Pelterie, has contributed nothing to this phase of the work, except a very excellent report by the engineer Louis Damblanc of tests on large powder-rockets carried on at the St. Cyr aeronautical institute. (These tests, which were made on rockets of the sort used by coast guards for dozens of years, were puffed up by the news agencies as "preliminary work on giant mail rockets.")

The "mail rocket" flights conducted in Holland, Austria, India and elsewhere by Zucker, Schmiedl, and others, contributed next to nothing to the modern science of rocketry, since these men used simply large gun-powder skyrockets made in fireworks factories and so met and solved none of the problems connected with the high-altitude liquid-fuel machine.

Austria (or what was once Austria), in the person of the engineer-pilot Eugen Sänger, contributes one of the

very few records of clean-cut engineering tests on liquid-fuel rocket-motors. At the Technical High School of Vienna, Sanger did actually conduct such ground tests on oil-burning rocket-motors, and what is even more remarkable, he wrote accurate technical reports and interpretations of his tests which were published in several aeronautical magazines and in his excellent book *Raketenflugtechnik*. Yet even his work is a partial dead-end as far as practical rocket experimenting is concerned, for he used gaseous oxygen in his tests, which for several reasons cannot be used in rockets intended for flight.

In Germany, toward the close of the 1920s, there was formed a large and active society (the *Verein fur Raumschiffahrt*—spaceship society) which seems to have built and flown a good many liquid-fuel rockets at its proving field near Berlin. But the political overturn in Germany wiped it out of existence, and it died without passing on to the world any but the most meager engineering data. By engineering data, I mean shop-drawings of the machines and devices which were tested, engineers' detailed reports, graphs, etc., which would enable other researchers elsewhere to profit by whatever was discovered. Newsreels, newspaper stories and general descriptions are no substitute for information of this sort.

The intriguing picture of great corps of scientists and technicians in laboratories scattered about the planet, all working diligently to build and test super-rockets, vanishes before a little investigation. Actually, whatever has been learned *experimentally and on record* about these new engines, has been learned by the merest handful of men working, for the most part, with very limited resources.

Dr. Robert H. Goddard is the pioneer of this group and has been at it longer and more consistently than any

other. He is the holder of the present liquid-fuel altitude record (7500 feet). He has built the only gyroscopically stabilized liquid-fuel rockets which have actually flown. He is at present continuing his investigations at his laboratory near Roswell, New Mexico, under a grant from the Guggenheim foundations.

Next to Dr. Goddard, probably the most active center of rocket experimenting is the American Rocket Society in New York, with its Experimental Committee of engineers. This group of men so far holds the distinction of supplying the world with the first and only accurate published data on the performance of liquid-fuel rocket-motors. This group has also built and fired several liquid-fuel rockets—the only ones that have risen from Earth in this country besides Dr. Goddard's.

The "rocket mail planes" which were flown at Greenwood Lake, New York, in February, 1936, were also propelled by liquid-fuel rocket motors. They were financed by a philatelist who wanted a special series of stamps carried by a new mode of locomotion. They were essentially jet-propelled aircraft or gliders, and not rockets, yet they were pretty certainly the first machines of this type ever to have been built.*

THIS LITTLE survey may have helped us to "come down to earth" about the amount of time, money and brains which has so far been put into rocket research. Perhaps the reader may un-

*Although this experiment was not entirely successful, a number of factors had militated against it. In the first place, the natural and efficient speed of a rocket is in the neighborhood of 600 to 700 miles per hour. At such speeds, airplane streamlining is considerably less efficient than that represented by the standard railway boxcar. The glider wings were unable to withstand the strain imposed during the time the rocket motors operated. They broke off, after seriously impeding the rocket.

They had originally been used in hopes that the rocket motor would lift the load, while the glider wings would give it a long gliding angle and greater distance. The rocket did its share with promptitude and efficiency. The glider plane, not the rocket, failed. The rocket motors were designed by Willy Ley.—Ed.

derstand a little better why he hasn't picked up his morning paper any time in the last few years and read in headlines: ALL WORLD'S ALTITUDE RECORDS SHATTERED BY HUSH-HUSH STRATOSPHERE ROCKET.

It's going to take some man-sized engineering research before this happens. The free-for-all record for any type of machine, engine, projectile or device built by man is now 25 miles, established by a Russian sounding balloon near Kiev. One can be safe in assuming that there's not even a practical shop drawing—much less a working model—in existence of a rocket capable of coming within ten miles of this record.

In the preceding discussion much emphasis has been placed on the term *liquid-fuel rocket*.

Anyone who wants to understand what's what in the field of rocketry needs a clear picture of what this term means. A liquid-fuel rocket is a rocket propelled by a liquid fuel plus, what is more significant, *liquid oxygen*, that is, oxygen chilled to such a low temperature that it is a bluish liquid instead of a gas. The term "liquid-propelled rocket" is more accurate, since the two liquids play an equally important part in the process and only one of them is commonly considered a fuel.

Brushing aside masses of discussion about possible nitroglycerine or high-explosive rockets, rockets burning compressed air or gaseous oxygen, rockets burning nitric oxide, rockets run by electrostatic repulsion, etc., it can be said that, as far as present technical resources are concerned, there is only one practicable source of energy for this engine—some simple-liquid fuel such as gasoline, alcohol or methane *burned directly with pure liquefied oxygen*.

Even the much-discussed liquid hydrogen must be struck off the list for several reasons. Anyone who has handled liquid oxygen—which itself is cold

and difficult enough to manage, thank you—wants nothing to do with liquid hydrogen, which is considerably colder, more treacherous and difficult to confine. Besides, it is extremely expensive (liquid oxygen itself is often a dollar a quart!) and when you take into account hydrogen's low density, requiring much bulkier storage tanks, the extra punch it packs is decidedly not worth the trouble.

Weight for weight, ordinary gasoline plus liquid oxygen (loxygen for short) is terrifically more powerful than an equal weight of nitroglycerine—and that's enough power to play with for some time to come.

The prime, essential fact about all this liquid-fuel business is that the power is in two separate liquids, which can be tanked, piped, throttled and finally mixed only at the place and time they are needed. Mixed, loxygen and gasoline are frightfully explosive. Separate, they are safe. If you must have an explosive to run a successful rocket—and the laws or dynamics demonstrate that you must—this is the kind of explosive to use.

The elementary facts about the rocket-motor have been stated often and adequately by many writers—it is the simplest heat engine known, short of the cannon; it operates more effectively in vacuum than in air; its basic principle is Newton's Second Law of Motion (for every action there is an equal and opposite reaction); its behavior is analogous to a rapid-firing gun driven backwards by its recoil, and so on.

LET'S CONSIDER it here, not as an idea or a diagram, but as a problem of design and construction, a practical job in heat-power engineering. From this point of view it is a sort of high-pressure furnace for converting the chemical energy of fuel into the kinetic energy of a jet of rapidly moving gas. The essential parts are very simple. First, there must be a nozzle out of which hot gases stream, forming the jet

whose kick, reaction or thrust supplies motive power. Next, there is the furnace or chamber in which the fuels are burned to form these gases. Finally, there must be some kind of openings or ports through which the fuel is pumped into this chamber.

That is all there is to a rocket motor—the “simplest prime-mover known”. All it amounts to, really, is a kind of big blow-torch. We hitch this gadget to a couple of tanks of fuel—propellants—set her off, and up she goes driven by the kick from the blast of flame. Figure 1 gives you a good idea of a “diagram rocket” of the kind which has made so many imaginary trips into the stratosphere with a pay load of algebraic symbols.

Oddly enough, it is the very simplicity of this engine which makes it such a difficult engineering nut to crack. The amount of energy which must be generated in the aforementioned combustion chamber, and shot out through the nozzle in the form of incandescent gases, is simply appalling. For example, a small motor weighing about seven pounds, built and tested by engineers of the American Rocket Society, *consumed fuel at the same rate as an 800 horsepower Packard aero engine!*

This terrific concentration of power manifests itself as an equally terrific concentration of heat. If all the energy contained in a perfect mixture of gasoline and oxygen were liberated in the combustion chamber, the resulting gases would be heated to over 6000° C.—2000° above the melting point of the toughest refractory substance known!

Fortunately, such rocket motors as have been built have been so inefficient that only a fraction of this heat has been liberated in the chamber. (Not all of it could be liberated even theoretically, because at such tremendous temperatures the molecules of oxygen and fuel can no longer unite.)

The rocket motors of Dr. Goddard, for example, have reached a peak efficiency of about 12%, while a series of smaller motors tested by the engineers of the American Rocket Society did no better than about 10% at their best.

(The efficiency of a rocket-motor, when not driving a rocket, may be hard to picture. Just what work is the motor accomplishing, if it is standing still? The answer is that the energy it is generating goes into moving the gases of the jet. Thus the “jet velocity” of a rocket-motor is an absolute indicator of its efficiency. The object is to make the gases shoot out of the nozzle as fast as possible. The harder they go, the more “kick” they cause, and the more thrust forward the motor is able to deliver.)

It is the very inefficiency of motors which have been built so far that makes it possible to run them at all without having them explode into white-hot drops of metal a few seconds after ignition. Naturally, as first attempts in a totally new field of engineering, they have been very simple, imperfect—almost rudimentary—types. They have been hardly more than the theoretical diagrams of the mathematicians turned out in metal.

Figures 2 and 3 show two examples of this type of rocket motor. The first, which was used to drive an experimental rocket, was simply a cast aluminum chamber and nozzle. The fuel ports may be seen at the base of the motor, near the “throat” of the nozzle.

THE SECOND is a type of motor built for ground-tests only. Which is, after all, pretty sensible, for when something goes wrong in midflight the most you can do is guess what happened. It is built up of heavy sections of duraluminum, bolted together and sealed with high-pressure steam gaskets.

The nozzle, you will observe, is machined out of nichrome, a special heat-

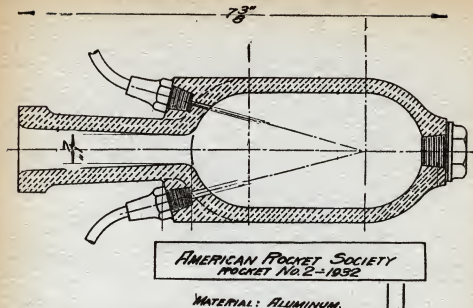


Fig. 2. Flight-test rocket built and flown by the American Rocket Society.

resistant alloy of nickel and chromium.

Why duraluminum, with its low melting point, for the body of the combustion chamber? Because it conducts heat away quickly, and so has more chance than even tool-steel which conducts heat slowly.

Why nichrome for the nozzle? Because midwest farmers are not the only folks troubled with erosion. When you have to squirt white-hot gases moving at something like a mile a second through a half-inch hole, it's best to make that hole out of something that can stand a bit of wear and tear.

Why the sections separated by gaskets? So the shape of the motor can be changed and comparative tests made.

In the summer of 1935, in Westchester County, New York, a whole series of motors of this general type were put through their paces on a machine called a proving stand. This machine consists of a set of tanks and gauges which feed the motor fuel under pressure, as if it were actually driving a rocket, and at the same time keep an

exact record of how much fuel it burns, what force it develops, and so on.

Various things happened to these motors. They made a terrific noise—something between the roaring of a tornado, the hissing of a thousand embattled boa-constrictors, and the screams of a regiment of famished tigers. Some of them burned as long as 16 seconds before the fuel supply gave out. Some of them sliced curious helical holes through the hard nickel-chrome alloy of the nozzles. Some of them blew out gaskets. (Incidentally, some of these tests found their way into newspapers as attempts to set off a "moon rocket". Oddly enough, rocket experimenters dislike that sort of publicity!)

THE ENGINEERS wrote reports of all these tests which were published in the Journal of their society and are now on file in most of the large libraries of this country, as well as in the hands of many rocket enthusiasts. Figure 4 shows a graph compiled from one of these tests. The curved lines repre-

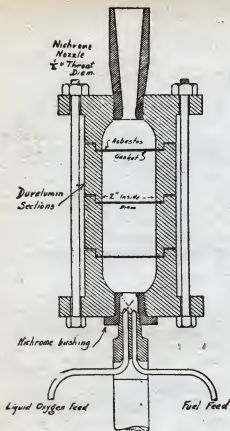


Fig. 3. Rocket-motor designed and built for tests on the proving stand.

sent, from top to bottom: The pressure of the fuel (this time alcohol) in the fuel tank, the pressure on the liquid oxygen in its tank, the pressure of the burning gases in the combustion chamber, and the force developed by the rocket jet. All of these factors are plotted against time in seconds. If you like graphs, you can pretty well psychoanalyze this particular motor from the information given by those curves.

The general conclusion from these tests, after much discussion and calculation, boiled down to—rocket motors have to be improved.

With a motor of this size, 8 or 10% efficient, it might be possible to build a

complete rocket weighing say 20 pounds with propellants, which would go up as much as five or six miles, after air-resistance and other operating losses are accounted for.

But, taking into account the unreliability of such primitive motors, is it worth while to go to the expense and trouble of building complete rockets in which to try them? Probably not, unless, like Dr. Goddard, you have enough resources to work on several aspects of the problem at once.

This is precisely the reason why no rocket has come anywhere near breaking an altitude record. The performance of this particular type of space-annihilator is fundamentally limited by the efficiency of its combustion chamber and nozzle in burning fuel and shooting out the resulting gases in a jet. Low thermodynamic efficiency means low-flying rockets, and there is no escape from that.

Dr. Goddard's flights were *not* altitude tests. They were tests of stabilizing devices. He deliberately used the still quite inefficient motor he had so far produced, because it was the only one he had, and because he wanted to see if rockets could carry gyroscopes and other mechanisms. There are some things about rockets that can't be tested on paper, or in a laboratory, or even on a more convenient, but much less vigorous, proving stand.

Certainly this matter of motor efficiency is not the *only* technical problem standing in the way of successful altitude rockets. There are others—plenty. Such as stabilization in flight, method of pumping fuels into combustion chamber, suitable light design and construction of entire rocket, material of which to build loxygen tanks and piping, etc. But those interested in the subject may jot it down as the first great obstacle in the way of successful altitude rockets—and eventual mail rockets, transoce-

anic rockets, and so on literally *ad infinitum*.

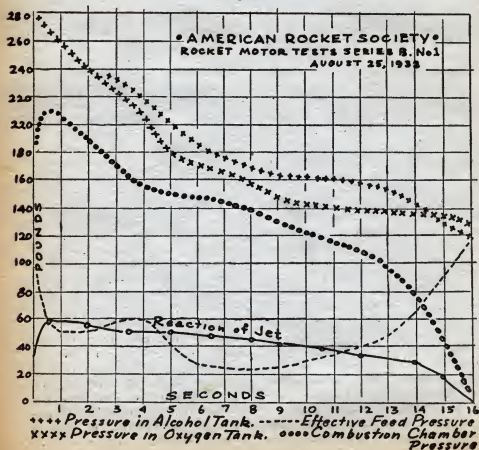
What are the chances of improving this troublesome thermodynamic efficiency? Not bad at all, the engineers tell you after emerging from behind embankments of reference books and tables. They have scarcely begun to use the top layer of their bag of tricks.

Although rocket-motors are, in a sense, brand-new contraptions, they are still heat engines—and combustion engineers know plenty about the habits of the breed. The men who build turbines, Diesel engines, gas furnaces and such-like gadgets have numerous handy hints to offer. They have all taken devices

which at one time were clumsy and crude and wasteful, and, by a process of constant refinement, have brought them to their present perfection and efficiency.

"What about preheating fuels?" they ask. "What about scientific design of fuel ports, so that proper atomization and mixing takes place? What about the proper shaping of the combustion chamber? What about calculating the nozzle according to the laws of hydraulics, so it will exhaust the gases in just the right manner? What about regenerative cooling by pumping the liquid oxygen and the fuel through jackets around the combustion chamber? What about metals such as molybdenum, and

Fig. 4.



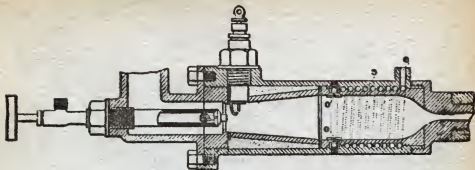


Fig. 5. This is not a rocket motor—it's the combustion chamber designed and patented for use with a gasoline-turbine. However, it involves all the principles of the efficient rocket—regenerative cooling, throat design, combustion chamber shape and size ratios. And this chamber was built and tested, running 40% efficient for hours at a time!

refractories such as tungsten carbide?"

"Well, what? Have you any idea what the final efficiency of a rocket-motor could be brought to with all these refinements?" one asks in return.

Again the engineers dive amongst the reference books and emerge with the diagram shown in figure 5. Is that a rocket motor, or isn't it?

Well, it isn't exactly a rocket motor—but it might almost be. It is a combustion chamber and nozzle built by a couple of engineers thirty years ago to drive the wheel of an experimental gas turbine with white-hot gases. It burned gasoline and compressed air, it was lined with carborundum and cooled with regenerative coils around the combustion chamber. *And it ran at over 40% efficiency for hours at a stretch.*

If engineers could do that thirty years ago with a gas-turbine furnace, they can do it again with a rocket-motor, using all the new alloys and processes that have been developed since then. In fact, some of the more optimistic of them believe that the rocket engine will ultimately become the most efficient prime mover known, short of the water turbine, which operates at above 90%.

To attempt an estimate of just how these motors would behave if they were

built and run on the proving stand would be folly. Greater complication in design, while it will eventually make possible greatly improved performance, at the same time introduces many factors which must be studied in painstaking detail. Rocket experimenters have no more than stated the problem with their experiments to date—they now face long and tedious research at the workbench and proving stand to perfect this newest and "simplest" of heat engines.

There is little doubt that America is leading the world in this field. Besides the main current of rocket research in Dr. Goddard, and the activities of the American Rocket Society, new centers of interest are slowly being formed. A rocket club has appeared in the engineering school of Yale University, and scientists at the California Institute of Technology have laid out an experimental program.

But there will be no sudden, world-shattering developments. If, next month, you see a newsphoto of some enterprising gentleman standing beside an impressive contraption which he claims is a "newly perfected rocket using a secret fuel which will propel it 100 miles into the stratosphere", be sure—or 99 and 44/100 sure—that he is a faker,



He was not recognized, and for a moment was at peace. Then— "It's him— him—the man with the Evil Eye!"

Synopsis:

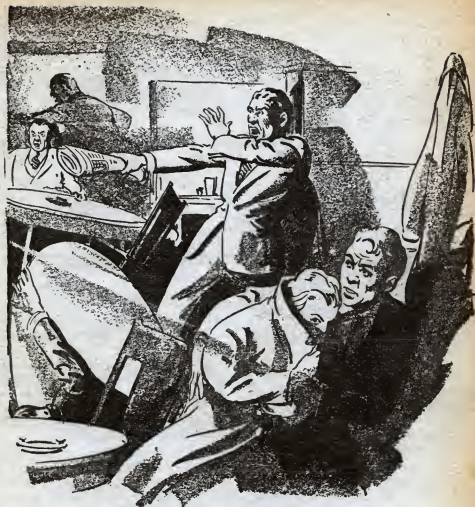
DOUGHFACE JACK TURNS COP KILLER

Two Dead and Three Dying Following Tramp's
Arrest in Central Park

STILL LOOSE IN CITY!

New York, June 17.—The unexpected sequel to months of benefiting mankind was enacted tonight by Doughface Jack, renowned as the tramp with the mitogenetic eyes.

Following his arrest by Patrolman Spink in Central Park on the charge of killing two prize dogs and the patrolman's horse with a glare, Doughface



THE TRAMP

by L. Ron Hubbard

A frightened little man possessed of a deadly power drives all New York—the Nation!—into panic fear!

Jack was questioned by detectives at Precinct Eight. The exact details of the slaughter at the station house were still lacking, since all those present were unconscious and critically ill, but it is

supposed that the tramp grew excited and glared at his captors, bringing death to two and probable death to three more.

This turn of the tramp's intention was wholly without explanation. To this

date no one, not even his mentors at the University, suspected that his mysterious eyes had any but healing powers.

Police throughout the city are searching for the tramp with orders to shoot on sight.

Quality of Eyes Unsuspected.

Some weeks ago, an accident brought fame to this unknown tramp when he fell from a boxcar, crushing his skull. Dr. Pellman, of Centerville, N. Y., operated immediately, sewing the two halves of the brain together and replacing the shattered skull with a silver bowl.

For some time, science has anxiously been trying to fathom the mystery of the strange healing power which resulted. With one glance the tramp was able to heal anything and even to completely rejuvenate the aged. Mitogenetic rays have been known to have great stimulating powers, and these rays were evidently present to a concentration hitherto unknown in the eyes of Doughface Jack.

Until today, nothing but good resulted from this Cinderella tramp. But his eyes evidently possess killing power which he can control at will, as well as curing power.

Part II

LIKE THE little boy passing the cemetery, Doughface Jack tried to appear casual and still keep alert. But for all that, he had to walk rapidly. He was sick at his stomach from the portent of doom which overhung him. Regardless of its mitogenetic powers, his brain was a maelstrom of confusion.

It was far beyond him to understand what had happened. He could only draw conclusions insofar as his experience would allow. He knew definitely that cops carried clubs and hit people over the head.

He had no great terror of jails. He had seen too many when booked for vagrancy. He had sometimes worked himself into jail when the nights were cold. But he knew that cops carried clubs, and brakies carried clubs, and in that lay his entire horror.

More than once his scalp had been bruised and bloodied by a nightstick, and the resulting headaches had filled weeks with misery. And now he had another thing bothering him.

Pellman—and he still thought he could trust Pellman—had told him that he would have to be careful of a fall. "You get a dent in that tin skull you've

got, Jack, and it's liable to be the end of you."

Of course the skull wasn't tin; it was soft, pliable silver. One blow from a nightstick and he would be a dead man. Doughface Jack knew that. He had no faith in anything after a man's lights went out and he was very anxious to stay on an Earth which had been pleasant to him. One blow on the head and he was done.

Cops, he thought as he scurried along uptown, were such unreasonable people. Could he help it if a couple dogs dropped dead and if a horse collapsed? Was it his fault? Did he do it on purpose?

No!

And had he asked those cops to bully him that way? And had he deliberately knocked them for a loop? And, therefore, was it his fault if they fell on their faces?

No!

But cops, he thought, were dumb. They couldn't understand those things and the next one—

And there he was, standing on the corner swinging his nightstick and watching the parade of baby carriages go along the park walk.

Doughface Jack's heart was a chunk of alum. He slowed down. He saun-

tered. He eyed the trees and sky and attempted to whistle. The officer had not yet heard the broadcast and though he thought that this pasty-faced little fat man was acting suspicious, there wasn't any real reason to accost him.

And so, for the instant, Doughface Jack got by.

Fifty feet ahead was a crossing and the lights were against Doughface. He was much too interested in the bluecoat behind him to see the truck coming. It was an enormous thing, grumbling under the weight of great rolls of sheet iron. The driver was a New York truck driver. He had the weight and he had the right of way, so he stuck his broken nose in the air and sailed serenely along and let the pedestrians fall where they might.

Doughface heard the rumble when he was almost under the wheels of the juggernaut.

With a yelp of fright, the tramp skipped back.

"Watch where ya goin'," snarled the truck driver in passing.

And then an awful thing happened. The driver collapsed over his wheel and the truck careened toward the curb. Pedestrians screamed as they scurried back. Over the curb went the truck, over the curb and over the sidewalk and straight into a plate glass window the size of a billboard.

There was a splintering crash, the rending of metal and the sudden shriek of the patrolman's whistle down the block.

Doughface Jack waited to see no more. He started to run and banged squarely into an officer coming from the other direction. He bounced off at an angle and that officer, thinking it was suspicious, tried to grab Doughface. Abruptly he was flat on the walk.

"Hey, you!" bellowed the other one behind Doughface.

The tramp spun about. He wasn't risking being either shot or struck from

behind. He knew what he could do now. He glared, and the patrolman banged to the concrete with a grunt which faded out into a moan.

WHEN DOUGHFACE took wing this time he barely touched pavement for blocks. He dashed over crossings and through crowds, driven by terror and the necessity of finding refuge at the University.

He beat the mile record getting there, vowing with each sturdy puff that he would never again walk these streets if he got out of this scrape alive. If possible, he would leave New York and return to the rods. Starvation was preferable to such danger.

So blind was he with sweat and exhaustion that he almost leaped up the steps of Professor Beardsley's house without examining the ground. But sunlight hit on a brass button in the nick of time. Doughface dived for the shrubbery and peered carefully forth.

The front steps were an entire bank of blue cloth. Fortunately, all the officers had been facing the door and they had missed him. They were not entering, it seemed, but waiting for their superiors to come out.

It was a chilling sight.

Doughface, panting as silently as he could, thought fast. He could not stay on the streets. His name had been plastered all over New York and his picture had appeared so often that he could never hope to escape exposure. He felt naked without strong walls around him.

He withdrew cautiously and hurried down the block. He turned the corner and then headed into an alley. He knew the back of Beardsley's house because he had often had the pleasure of talking to the garbage man there. And so, with great stealth, he tiptoed up the steps and eased into the kitchen. The officers would not search the house. They wouldn't think he was here. And

besides, Beardsley would help him out of this jam. Beardsley would tell them the truth.

He started to enter a hall when he heard voices in the study. He got down and put his eye to the keyhole and found that he was looking at Beardsley in profile at his desk.

"Gentlemen," said Beardsley, "I tell you once more that he is not here. You can search the house if you like."

"Maybe he'll come back," muttered a police captain.

"We'll wait," decided an inspector.

"Gentlemen," said Beardsley, tears in his voice, "believe me when I tell you that I had no slightest inkling of his potentialities."

"Yeah," said the police captain.

"But believe me!" said Beardsley, polishing his pince-nez in agitation. "I took pity on him, a poor, helpless tramp who——"

"You made yourself famous with him," stated the inspector.

"Gentlemen, in the interests of humanity, science will even condone vulgar publicity."

"You didn't tell the newsmen that," said the captain. "See here, professor, your University——"

"My University," said Beardsley, "has no responsibility in the matter whatever and neither have I. There is in existence no contract establishing any connection for responsibility between the University and myself and this tramp. What he has done is regrettable, true. But to expect the University to act as guardian angel to a tramp—a mere tramp, gentlemen—that is going too far."

"You mean you'll turn him over to us?" said the inspector hopefully.

"He has broken the law," stated the professor, growing bolder. "And for that he must suffer."

"If them guys die," growled the captain, "it's the chair for him."

"Justice must be served," said Beards-

ley in a devout manner.

"Say, look," said the captain, "how come you didn't suspect that this hobo could kill things by just lookin' at 'em?"

BEARDSLEY took refuge in scientific lore. "Mitogenetic rays are almost wholly unknown. No great amount of work has been done upon them. We were experimenting, that was all. Evidently, as long as this tramp is in a jolly frame of mind, the rays are beneficial to the recipient. But when this man's anger is roused, then the rays become so intense that they not only kill all foreign bacteria and stimulate cells and tissue but they destroy those cells themselves. By destruction of such cells, a man is instantly made to suffer from acute anemia. And there is a telepathic factor which seems to enter. Generating fear, this tramp makes another man feel afraid at long last. Generating rage he makes other men rage. Generating cheer, he makes others cheerful. Emotional telepathy, the commonest kind——"

"I didn't come here to listen to no lecture," growled the captain. "All I want is to get my grub hooks on that hobo. We'll show him a thing or two."

"Perhaps," said Beardsley, "if you make a cordon about any part of the city where his presence is known, you can sneak up on him. I must warn you that if he is given a chance, no amount of police can cope with him."

"You mind if we—ah—find it necessary to shoot your guinea pig?" said the inspector.

"It would be a loss to science," said Beardsley. "But—the man is dangerous. We have no claim or hold upon him, no responsibility to him——"

"Even though he got you a five-million-dollar donation," said the disgusted captain. "C'mon, inspector. The circles of the mighty make me sick to my stomach. Let's go out and nail that tramp."

"Professor," said the inspector, "if he comes here, you will, of course, quietly call us?"

Beardsley pondered. It was dangerous to be in line with Doughface Jack now. "Inspector, I can probably find a way to put some heavy sleeping powder in his food."

"Good," said the inspector.

"Huh," said the captain in disgust.

Doughface watched Beardsley's eyes follow them to the door. Inside, the tramp was shaking like jelly. He saw Beardsley get up and approach the door and he scurried back into the kitchen and out into the alley.

"Them guys," said Doughface as he went over the back fence, "is just a bunch of stuffed shirts after all. They're y'pals until y'get in trouble—Pellman and all the rest of 'em!"

VIII.

SHERIFF JOE BANKHEAD raced, for all his bulk, into the office of Dr. Pellman. His mustaches were waving in the wind he made and so did the paper in his hand.

"Doc! I just got"—he puffed for a moment—"I just got a long distance telephone call from the Chief of Police of New York City!"

"Well," said Pellman, leaning back in his swivel chair. "So you're gettin' famous, eh, Joe?"

"No. Listen. You know that Doughface that left here three months ago."

"I ought to," smiled Pellman.

"Now, look, Doc. You got to go to New York or somethin'. It's awful."

"New York. Why? Miss Finch and I were thinking of getting married tomorrow—or hadn't you heard by some strange coincidence?"

"Yeah, sure. But listen, Doc. That Doughface has gone crazy. He knocked out some cops and a truck driver and half the——"

"Whoa," said Pellman. "Take it easy."

"Well," said Joe, taking a long breath, "the Chief of Police of New York told me that Doughface Jack got loose and the first thing he done was flatten a desk sergeant. And then a flock of cops trailed him and tried to take him and he knocked out all of them. And then a detective tried to pot-shoot him from a window, but Doughface seen the gun and looked up and the detective fell out of the window, stone dead. And then Doughface walked into a restaurant—the Waldorf, I think it was—and when they wouldn't serve him without some kind of clothes on—I dunno if he's goin' naked or not—why the head waiter fell down dead and so did another guy behind him. And then this Doughface walked out and the hotel dick drew his gun and Doughface killed him. The whole town's on its ear, Doc. Nobody knows what to do. Doughface Jack is walkin' around and killin' people just by lookin' at them and the place is in an uproar! The Chief remembered the case and he called me to see if I could make you grab a plane or train and get the hell to New York and stop this Doughface. But—but—gosh, I never thought of that!"

"What?" said Pellman.

"Why, he'd probably kill you!"

Pellman got up and lighted a cigarette. Musingly he looked into the sunlit street. "Poor fellow," he said feelingly.

"Poor feller be damned!" said Joe. "He's knockin' down guys right and left. First thing you know he'll get the idea of robbin' banks and then maybe he'll decide to run the country. And nobody can stand up to him. The governor ordered out the National Guard with machine guns, but they won't arrive until tonight!"

"What?"

"The governor——"

"I heard you! Miss Finch!"

She came swiftly.

"Pack a grip. Anything, you understand! Call the Cincinnati airport and tell them to send a ship—any ship—over here to land in that pasture south of town. I've got to get to New York. They're going to kill Doughface."

"But," said the sheriff, "they'll have to kill him. He's——"

"I did that to him. I'm responsible. Quick, Miss Finch."

DOUGHFACE tried to obliterate himself by merging with the crowd which poured into the subway at five. He hid his face and did the best he could to keep from being recognized, but it wasn't any use.

A man was coming up the steps with a newspaper in his hand and the front page of that tabloid was given up wholly to Doughface Jack's visage. The man glanced up as he bumped into somebody and stared straight into the tramp's face.

The man turned white and a strangled shout left him, "*It's the man with the eye!*"

A second later the only person on the subway steps was Doughface Jack. At the bottom lay his betrayer, out cold. He sighed deeply and pushed his hat back from his round, pasty face. He picked up the paper which had betrayed him and read the sad story.

EVIL EYE STILL LOOSE

TRAMP TERRIFIES CITY

Doughface Jack, until lately renowned as the panacea for all human ills, is still at large after three devastating days.

One murder and countless cases of assault have already been committed and police fear more.

Washington expressed the grave concern that the man might acquire delusions of power and seek to dictate governmental policies——

Doughface threw the paper down in disgust. "Geez, them guys is dumb!"

He stepped back to the street, abandon-

ing any idea of hiding in the subway. But an astonishing thing had occurred.

Here he was at Broadway and Forty-second Street and not a single human being was in sight. He saw an office window slam, but that was all.

Miserably he plodded along. This was very different from his late affluence. Not one man could he talk with. Everybody knew his face by this time. Nobody would run the risk of being sent to the hospital. Even auto traffic would careen out of his way. That truck driver that had almost run him down had plowed through a display window when Doughface had happened to glare.

If those cops would only leave him alone!

The one thing he did not feel bad about was the detective that had tried to pot-shoot him. Seeing that gun had almost killed Doughface with fright, but he had remembered to glare just in time. Of course the detective had fallen, but that was his hard luck.

HE TURNED up deserted Seventh Avenue. He was very thirsty and he eyed the signs as he passed. Far behind him, traffic was cautiously beginning to move once more.

Doughface stepped into a beer parlor and saw with relief that nobody there had heard the street commotion. He had almost reached Fifty-fifth Street and maybe that accounted for it. The bartender came up with a professional smile. "What'll ya have, buddy?"

Doughface felt like a dog feels when he wags his tail. "Gimme a beer," said Doughface.

The bartender reached for a glass and the tap. But just then a man in a booth stood halfway up, a newspaper gripped in his fist, his eyes round as dinner plates as he stared at Doughface.

"It's him!" screeched the traitor. "*It's him!* The man with the Evil Eye!"

Chairs crashed and glasses splintered and feet thundered. And then everybody was gone except Doughface Jack and the man who had called him by name. The traitor lay in the sawdust, unconscious and pale.

Doughface quietly tasted his beer, but his melancholy was so deep that he could not enjoy it. He put a dime on the counter and wandered back to the walk. Again the news had spread and cars were stalled and abandoned in the street. Nothing in sight moved, though an L roared like surf in the far distance.

"Geez," sighed Doughface, "I ain't got a friend in the world. What wouldn't I give to be in a jungle cookin' up some rotten meat in a tin can!"

Shoulders hunched, he plodded northward and into Central Park.

The lights were just coming on and the day was sadly faded. It is this period when it is the most difficult to see, having neither sun nor complete night. Pedestrians had lost sight of Doughface Jack, had not expected him to walk this deeply into the park.

And it was with relief that he found himself trudging with a crowd again, his hat pulled down over his face and his eyes upon the ground. There was something very soothing in this mingling with humanity once more. It is very hard to be a pariah. Doughface was enjoying this association to the limit. He grinned a little to himself as he went, and bit by bit he had begun to regain some of his spirit. He straightened up gradually till he was walking fully erect.

Darker and darker it became and, by contrast, the more penetration did the park lights possess. Higher and higher rose the brim of his hat from his face.

He could not stand prosperity.

He was swaggering along at last and a man with half an eye could have recognized him. It was not so strange that a man with two eyes did.

He was walking around a fountain and the light was very bright. There

were many people here, out for an evening stroll. A beggar woman was selling pencils on a bench, sightless eyes cast down behind her black glasses. She was trying to look humble.

Doughface passed her without a glance the first time and marched straight into the glare of the park lights.

A man and woman were coming toward him in the crowd and the man was paying more attention to the woman than he was to his right of way. He bumped into Doughface and glanced up with a scowl.

THE PASTY complexion could not be missed—the round face and the peculiar glow in the eyes which, in this light, were almost as luminous as a cat's.

The man staggered as the recognition struck home. He opened his mouth to yell and strove to pull the woman away. Doughface knew what was coming. He tried to shout a warning himself and beat that warning scream. But all he did was glare.

"It's him! It's the *man with the Evil Eye!*"

The man said no more. He collapsed on the gravel. There was a surge of the crowd and Doughface Jack was left in a swiftly widening circle. The woman was kneeling by the man, striving to pull him to his feet.

Doughface felt bad about it to see her braving death to get her man to safety. She was a worn looking woman—

But suddenly she was stronger and just as suddenly her man got dizzily to his knees and, with her help, limped hurriedly away with fearful backward glances.

"Geez," said Doughface, standing all alone. "It's happened again. Damn the luck anyhow!"

There was no use going deeper into the park. The police might be around and he had better change his location with speed.

The beggar woman had been knocked from the bench in the rush. Her pencils were scattered in the gravel and a few dimes and nickels were lost beyond her blindness.

And Doughface was running. The old beggar was just getting up, her hands snatching at the pencils like claws. Doughface was not looking for anyone to be down on their knees. He kicked her solidly and fell over her. The jolt made lightning flash behind his eyes, stunning him for an instant.

She had screamed with pain and now she sat rocking back and forth in agony, clutching at her side. One hand went out to support her and she touched Doughface Jack's shoe.

She knew he was still there. She caught her breath sharply and then, for all his years in the jungles, Doughface Jack felt the impact of real cursing which carried hate behind it with every foul gasp.

She called him everything a mule-driver could think of; she tore his ancestry apart, blasted his possible progeny, accused him of all the diseases known, attacked his personal habits and withered him with sheer obscenity. And all in a shrill, awful whine which was blasphemy itself.

Doughface Jack was stunned. He did not know what he was doing. He heard the words and saw the source and anger flashed like powder burning in his eyes.

And she crumpled. She sank down like an empty sack dropped in the dirt. One hand was outstretched, fingers barely touching a pencil and the other still clutched her side. Her breathing was slow and laborious and loud and it took no second glance to see that in an instant she would be dead.

Doughface Jack sat up straighter. His brain was clearing and he understood what he had done. He looked at her.

The coat was colorless, dirty and torn. Half a neckpiece was clumsily sewed to it with burlap thread. One stocking was

twisted and lumpy about her leg and the other was a man's sock. Her shoes were all the way through and her dirty soles were bare. The hat was a pitiful attempt at jocularity with its bumptious feather still waving. Her skin was so tight across her bones that it seemed no skin at all but parchment.

Her face was little more than a skull with cheekbones like brassy doorknobs. Her nose was swollen with drink. And her glasses had fallen away to disclose those awful sightless eyes now staring inwardly at the gathering blackness of death. They were no more than holes in her face, those eyes, with great sooty shadows spreading out from them across the seared flesh.

She was horrible.

BUT DOUGHFACE JACK saw the pencils and he saw the torn sign, "I am Blind". He knew what it was to be cold and hungry and alone.

He hitched himself forward to her across the gravel. He glanced around to see if any police were coming. He tightened as he thought he caught a siren's far-off moan.

He came closer and touched her shoulder. "Please," he whimpered, misty-eyed. "Please, I didn't mean it. I got knocked out too and I didn't know what was the matter. Gee, I wouldn't of killed you if I'd knowed. You got to believe that! I wouldn't 'a' hurt you."

He shook her roughly. "Look, don't kick off. Don't make me know I killed you. Gee, I been on my uppers myself, I know——" He sank back. "God, I wish I was dead. Nobody can look at me, nobody can be near me——"

But she had stirred. She was struggling to rise a little, pain still gnawing at her skeleton face.

Doughface sat up too. With a surge of hope he leaned toward her. "Gee," he cried excitedly, "maybe you ain't gonna die! Gosh! Look, it's all right.

If y'wanna, I'll go getcha a hamburger. I'll getcha a steak and—an—an——"

The impacts of the shocks hitting her were enough to make her shiver like a machine-gunned soldier. But she straightened more and more. She left off propping herself up.

"That's swell!" cried Doughface gleefully. "Look, I'll getcha, anything you want. I can have anything I want. All I gotta do—— Come on, thata girl!"

He jumped up and helped her to her feet and then he stooped to get her glasses and pencils. He handed them to her and she looked at them wonderingly.

"Huh," cried Doughface with great joy. "You can see!"

"Yes," she said dazedly. "I—I can see!"

Stupidly she gazed all around her. "Why—why it's night and I thought it was still day."

"C'mon, I'll see you home," said Doughface, jumping like a puppy at the thought of being able to talk to somebody, anybody.

"And that—that's the fountain I've been hearing for years," she said wonderingly.

"Y'been blind that long?" said Doughface.

"Since I was twenty-three. I'm sixty-one now." She laughed a little shakily. "Something must be terribly wrong—or right. Why is it that I can see?"

"It's me," said Doughface. "I used to do that all the time before—before a dumb cop got mad and chased me on his horse. And for days and days I been walkin' around and every time——"

"Oh," she said in sudden understanding. "I heard somebody say something about you. They said I ought to go see you but I thought it was just another one of those bunko schemes. They're all bunko schemes."

"I ain't," defended Doughface stoutly.

SHE GLANCED around her again and saw that a pop-corn vendor had de-

serted his post. There was candy there and pop-corn and she was starved. Swiftly she moved toward the cart and into the bright light of the park lamps beside the splashing fountain. With eager hands she snatched up the bags and then, with another sly glance about her, she emptied the till into her pocket.

"Hey," said Doughface, catching up with her. "Nix on that put-together, sister. Stealin' ain't goin' to go. I'd get blamed for it."

"And why not?" she said defiantly, whirling on him.

He caught his breath and stopped dead.

Suspiciously she stared at him. "Well, what's the matter now? I know I ain't no lily to look at."

"No—n-no!" stuttered. Doughface protestingly. "No—geez—it ain't that. It's——"

She had changed. How radically she had changed!

Her eyes were black and fiery like those of a Spanish dancer. Her face was a perfect oval and the skin was fresh and delicate of color. Her teeth were white and flashing and her hair was glossy and ebon. Her hands were smooth and each nail upon them was perfect.

She followed his gaze to her hands and looked at them herself. She gave a start. "Why . . . why I thought they were—rough!"

Doughface Jack didn't know just why, but he couldn't swallow. He could feel the blood throbbing in his veins and he was lightheaded and wanted to shout. But there was still something worshipful about the way he felt.

She was the loveliest thing he had ever seen anywhere. She was a wondrous, vibrant girl as soft and pliant as silk and yet there was steel in her too. He was awed.

She took a quick step to the fountain and looked down at her reflection. She glanced at Doughface Jack.

And her voice was hushed.

"You did this to me. I heard but—but I didn't believe. And now, now I'm as I was the day the fire made me blind!"

"Gee," whispered Doughface, "you're swell!"

In a sudden ferocity of distaste she looked at her rags of clothes. She ripped at the coat with offended hands and cast it from her.

She looked like a girl of seventeen, as sweet and innocent as a beautiful woman could be at that age.

But one thing had not changed. Behind those flashing eyes was a mind packed with the lust and chicanery of thirty-eight years of begging and sixty-one years of life.

She knew. She stopped ripping at her clothes and stared at Doughface Jack. "I've heard lots about you," she stated slowly. "I've heard them talking here in the park and on the streets. They're afraid of you. The police can't stop you. All you have to do is look at a man and that man can no longer stand. Yes, Jack, I have heard a great deal."

He was too happy to be near her to care too much what she said. He was glowing with companionship.

"Yeah," he said disinterestedly.

"They've tried to shoot you and club you, but they can't. All you have to do is look upon them and they drop, Jack."

"Yeah?"

"Listen, Jack, has it occurred to you that you could have anything you want in the whole world?"

"Yeah, but what's the use——"

"Use?" she cried with an exultant laugh. "Use? Why you precious fool, can't you see it?"

"What?" said Doughface.

Her voice was sibilant and lovely. "It would be easy," she said, "for you to rule the world."

He wasn't paying much attention in that instant. A rumble was in the air

and whistles shrilled from afar. He stepped swiftly to a crosswalk and stared at the street a block away. An army camion was there and men were leaping out of it, rifles with bayonets fixed gleaming in the light. A machine-gun crew was hurriedly slamming their weapon on its tripod.

"Geez," said Doughface, terrified, "We got to get out of here! It's the army!"

IX.

DOUGHFACE JACK was thoroughly frightened. He snatched at the girl's arm and strove to head her around the fountain and across the park. She, too, was infected by his terror and followed blindly.

He brought up short. He had seen bright buttons gleaming across the park and he heard a camion roaring there as it surged to the curb to discharge its men in olive drab.

Doughface took a dozen false steps north and again he heard camions. He whirled in a panic and again skirted the fountain, striving to get out of the trap to the south. But there was no exit there. A hundred men in company front were marching across the lawn straight toward them.

Doughface felt sick. He could feel a steel-shod rifle butt clanging down upon his silver skull. His mind, lacking any solution, was, for the moment, completely blank.

The girl shook herself as though she had been drugged and was just coming to life. She took check on the situation. Doughface Jack was patently too much in a funk to meet these soldiers, and the soldiers, just as clearly, were there to shoot Doughface on sight.

But they had only guessed that their quarry was here. Outposts had reported no man passing them. Doughface must, then, be somewhere within an area a block square and every inch of that area would be covered.

She could save herself. It would be easy to scream for help and thereby avert death by bullets. And life, at last, tasted very sweet to her.

But she didn't. She grabbed Doughface by the shoulder and yanked him into the shrubbery. Against his amazed face she slapped handfuls of dirt. She roughed up his clothes. She bashed in his hat. Then, on hands and knees, she went back to the bench where she had so lately sat and located the dark glasses, the tin cup, a few nickels and some pencils.

She put the glasses on Doughface.

"Whatcha doin'?" he complained, shivering as he listened to the marching feet which drew nearer and nearer.

She broke a stick from a shrub and pushed it into his hand. "Haven't you ever panhandled?"

"Yeah," said Doughface, "but I can't figure these soldiers would make such hot suckers."

"Be still and follow me."

She crawled back to the gravel, Doughface after her. Suddenly she shoved him to earth. "Don't move. Just moan!"

Doughface got it. He drew himself up in a knot and moaned piteously.

"Help!" screamed the girl. "It's *him*! It's the man with the evil eye!"

Doughface thought for an instant that he was betrayed. But when he glanced up and saw the innocence of her beautiful face, his doubts were vanquished.

"Help!" screamed the girl. "There he goes! There he goes! O-o-o-o-oh, father! Father, speak to me! O-o-o-o-oh, he's dead. I know he's dead!"

WHISTLES shrilled in the darkness. Boots thudded over the lawns. A young lieutenant, his face white with strain, charged up, automatic in hand to behold a beautiful woman weeping.

"O-o-o-o-o-oh, I know he's dead," she moaned. "I know it! He killed

him, he killed him!"

"Quick, lady, which way did he go?"
"Oh, he's dead, I know he's dead!"

Doughface pushed out a moan and drew up in a tighter knot. The "I am Blind" sign was still on the gravel. The tin cup and pencils and dark glasses told their story well as did the scattered coins which gleamed in the lamplight.

"Quick, damn it," said the jittery lieutenant, "which way did he go?"

"Oh, my father, my poor, poor father," moaned the girl.

"For Heaven's sake!" cried the lieutenant, "are you going to let that murderer get away? Which way did he go?"

The girl pointed with a trembling hand. "That way," she choked. "That way. The beast! To strike down a poor, old, blind beggar——"

"We'll get 'im!" yelled the lieutenant. His whistle shrilled and he signaled also with his arm for his men to come up on the double.

The other sides of the square were closing in.

"He's over there in those shrubs!" cried the lieutenant.

"Clear the way beyond!" bellowed a captain.

"Machine guns!" roared a major, "rake that shrubbery!"

Machine gunners began to trip their chattering guns. Bullets whipped and sang a deadly chorus through the shrubs.

"Company A," roared the major. "Into line!"

"Company A, advance!" cried the captain. "Charge!"

They charged the cover and bayonets flicked and stabbed through wood and earth.

"Nothin' here!" cried a sergeant.

"He's got to be there!" yelled the lieutenant. "That old man and girl ——" He pointed and then stopped, looking foolish.

The old man and the girl were gone.

And they were running with all their might and the shrubs took long strips from their clothing. They were going south back toward Times Square.

"Y'all right?" panted Doughface.

"Never felt this good in my whole life," said the girl. "If we can get into the thick of it those soldiers won't dare shoot. Keep hold of that cup and those glasses!"

"I got 'em," puffed Doughface.

A sentry loomed before them. He saw them and started to raise his rifle and shout at the same time. The sentry went down in a heap.

The driver of a camion saw them coming a hundred feet away and he started to shout. But Doughface had seen him first. He slumped over his wheel, arms loose and dangling.

A taxi was cruising past. The girl was startled by it. She had not thought that a taxi looked this way.

And Doughface stopped it, careful not to knock the driver out. Doughface thrust the girl into the machine.

"Drive," said Doughface.

"Where?" said the startled cabbie.

"Fifth Avenue," stated the girl. "I've always wanted to see it."

THE CABBIE gave them a sour look. He could judge people very well by the kind of clothes they wore. "Y'got any money, pal?"

"Sure," said Doughface, reaching into his pocket.

But he didn't have any money.

"I thought so," said the cabbie. "Gwan, scram, y'dead beats!"

Doughface had no time to think about it. The cabbie went sideways into a pile under his meter. Doughface was aghast.

"Can you drive?" he asked the girl.

"Of course not. Can you?"

"I th-think so," said Doughface. He popped out and then into the driver's seat. He had seen it done often enough. He crashed the gears into reverse, saw

that he was wrong and ground them brutally into high.

His luck held. The car started ahead and Doughface sat up straight and gripped the wheel hard enough to crush the wood.

The girl looked back anxiously. Some soldiers were coming, and whether or not they would connect a cab with Doughface was a problem. But Doughface had his hands full already without further worry. The taxi was lurching like a bucking bronc.

They came to a crossing and the light was against them. Doughface was a little slow on finding the brake and through they went. He looked around hopelessly, thinking certain a policeman would see. But none did.

His luck was still holding.

He made it into Fifth Avenue, nursing the throttle to discover what happened where. "Geez," he called back, "this is the nuts."

"Don't go too fast," begged the girl. "This is the first time I was ever in a car."

"Don't worry none," said Doughface, exuberant in his control of power. "I'll get——"

But he didn't. A yellow and green bus stopped squarely before him and he missed the brake with his foot. He barely had time to twist the wheel violently to the right. Belatedly, he found the brake and tromped on it, coming to an abrupt stop almost up against a parked limousine.

He was bewildered. He knew he couldn't get out of this without making a scene, and if he gathered a crowd that would be a tip-off to the soldiers, twenty blocks behind.

For a moment he strove to back up and get out. But it was too much in his excited state.

"We gotta beat it," said Doughface, leaping out.

The girl was by his side as he raced to the walk. Already an inquiring of-

ficer was walking slowly over toward the curiously parked taxi.

Doughface had the glasses on again and the tin cup in his hand. The girl led him.

It gave her a sense of power she had never known to be finding the way for another human being. Always it had been herself that had been led. It was wonderful not to have to stop uncertainly to search for a curb, poking about with a stick, hoping that somebody would take pity—

Few ever had. The world had gone by, marked by the shuffle of feet and the blat of horns, by cruel bumps. The world had dropped precious few nickels and dimes into the tin cup.

It was glorious to be walking here, seeing this world for the first time in thirty-eight years. And not yet did she know how beautiful she was. She caught her reflection in the window of a shop. She stopped dead.

"What's up?" said Doughface in alarm. He lifted the glasses and saw that she was staring at herself in the show mirrors. "Oh. Yeah, they always do that. C'mon before somebody spots us."

BUT HER gaze had shifted now. A wondrous golden gown which looked like the real metal was on a sinuous model there. And in the other window was another model wearing an evening wrap of fur so downy that she knew it would be a thrill to touch it.

"Jack," she said.

"Let's go. Geez, them soldiers'll be around here any minute."

"Jack," she said, coaxing.

"Whatsa matter?" He was almost gruff, but the instant he looked at her he melted. "Yeah?"

"Jack, I want those clothes."

"O. K. Tomorrow we'll figure how to buy 'em."

"But why buy them, Jack? Why? You would have to steal the money to

get them. Why not just steal the clothes themselves?"

"Geez, but the cops——"

"Jack, you know very well that you'll be killed on sight. Why make a fuss about burglary?"

It was uncertain reasoning to Doughface, but somehow he couldn't think up an answer, looking at her.

She was swift to press her advantage. "And look. There's an evening suit, too. Oh, I've almost forgotten how to read. What does it say, Jack?"

"What the man about town will wear."

"You'd look wonderful," said the girl.

"Aw, you don't get *me* into one of them monkey suits."

"Jack," she wheedled.

And again he could not resist. But there was traffic here and people along the walks. Wondering how to avoid doing this, he backed into the doorway as though about to beg.

He did not know what the girl was doing. There was a light in the shop, but he had not connected it with a watchman. He solidly faced front, trying to think. This wasn't honest, even by a tramp's standards. A chicken, yes. A watermelon, yes. But not a thousand-dollar evening gown, a five-thousand-dollar wrap.

He heard the door latch click and whirled. He saw the girl lying on the floor of the entrance way. She had rung the watchman's bell and now——

The man was a Greek. But he could not resist this curious thing. He opened the door. "Hey, you go away. You gotta go away. Beat it. I don't allow no beggin' inna this place."

The girl got up with a look of reproach and then, suddenly, she struck at the man. He dodged and grabbed her and something happened inside Doughface Jack.

He was instantly a raging tiger. He swept the girl aside and reached for the

Greek. But he never had a chance to touch him. The man crumpled in the doorway.

Doughface whirled to see if the walk held any danger and then, seeing that New York strolled unobserving by as usual, he grabbed for the girl to drag her away.

But she had gone inside. Anxiously he hauled the watchman out of sight, closed the door and plunged into the store.

"Hey!" he called. "Hey, you! We gotta get the hell outa here!"

BUT SHE WAS not to be seen. The dress was gone and the model naked. The wrap was still there. And there was a wake of havoc to show where the girl had gone. The counters were mussed here and there, and an occasional something had fallen in the aisles.

Doughface surged after her. But she had vanished now. All alone in the gloomy first floor, he stopped and looked at the images around him. Other models in the shadows were covered with white cloth like so many ghosts.

He fidgeted unhappily. This was robbery. This was nothing but robbery. So far all they had against him was his eyes, but now they'd have larceny—and grand larceny at that. He knew what it meant.

But still, they were trying to shoot him on sight, weren't they? You bet they were. Like a dog without ever giving him the slightest chance.

He roamed back to the front door.

He was not angry with the watchman now that he realized it had all been a trick. The poor guy was only doing his duty. He had come up thinking one of the bosses had wanted to come in after hours to work—it was not yet late—and had seen two beggars—

"Geez," said Doughface, "I dunno why I have to do this to people."

He sat down on a counter and swung his legs in deep concentration. He was

looking at the watchman without knowing it.

Still and all, robbery or no robbery, he would have gone crazy if this girl hadn't turned up when she did. And if they'd shoot him, they'd never send him to jail and if they wouldn't do that there was nothing wrong with robbery.

He grinned a little when he thought how changed that girl had become. Must be funny to be blind for thirty-eight years and then, all at once, see New York with thirty-eight years of gadgets added to the streets.

And she'd look better with those clothes—

The watchman had moved. He sat up and stared around. Doughface slid off the counter. He wasn't sore at this guy now.

"Feel all right?" said Doughface.

"Whatsa mattah?" cried the watchman. "Whatcha do in theesa store?" He stuck out his jaw as he advanced.

He went down again.

He was not hurt badly this time.

"Look," said Doughface, "I'm the guy with the Evil Eye, see? Now you lay there and be good."

The Greek knew all about it. He quaked with terror. And that made Doughface grin some more as he tied the fellow up.

"Tomorrow," said Doughface, "you take a squint at yourself in the glass."

"Why you say that?" whimpered the Greek. "You wrecka me?"

"Hell, no," said Doughface. "But the next time you buy a suit you'll have to go to the small boy's department."

THE GREEK didn't believe—wouldn't until the morrow when he saw a mirror. Doughface sat back on the counter.

And at long last here came the girl.

Doughface thought he was seeing things. She had found a shower in the employees' dressing room and she had

found cosmetics and all else she needed and now it was enough to blind a man just to look at her.

"Geez," said Doughface in reverence. "Y'look better'n a movie star."

She smiled at him and he felt like he was going to faint. "Jack, dear, get yourself cleaned up."

"Yeah," said Doughface without enthusiasm.

"You'll find a shower bath downstairs, Jack, dear."

"Yeah."

"And I'll lay out your clothes according to this chart I found. This is what they're wearing, isn't it?"

"Yeah," said Doughface, lingering.

"The bath," said the girl.

"Y'won't go away?" he begged.

"Of course not, silly."

"But I don't even know your name."

"Make it Rita. I always liked Rita."

"Is that really it?"

"What does it matter?"

"Don't, I guess. Say, y'don't think we're goin' places, do you?"

"Yes, Jack, dear."

"Where?"

"Washington."

"Y'mean Washington, D. C."

"That's right."

"But why?" he demanded.

"You'll find out."

"But I wanta know now!" he stated. "Why should I go to Washington, D. C.? I don't know nobody in that town."

"You will very shortly," promised Rita.

"But *why*?" said Doughface.

"It is probably very fortunate for you that I came along, Jack. Otherwise you'd be dead out there in the park."

"Yeah," he admitted.

"You're not too bright, you know," said Rita.

"Yeah, I know. I gotta hand it to you for knowin' the put-together, Rita. I jim the fake ever' time."

"Listen," said Rita, "everybody is out to get you. That was the army there tonight."

"Don't I know it?"

"Well, it's really very simple, Jack. If you were bigger than the army, now, the army would not dare try to shoot you."

"Yeah, but I *ain't* bigger'n the army. How can I be bigger'n a hundred thousand men?"

"The Commander in Chief of the army and the navy," said Rita, "is the President of the United States. Now, you see, if you run the army, you are bigger than the army and it won't try to get you."

TO BE CONCLUDED.

The Third Astronomical Cover

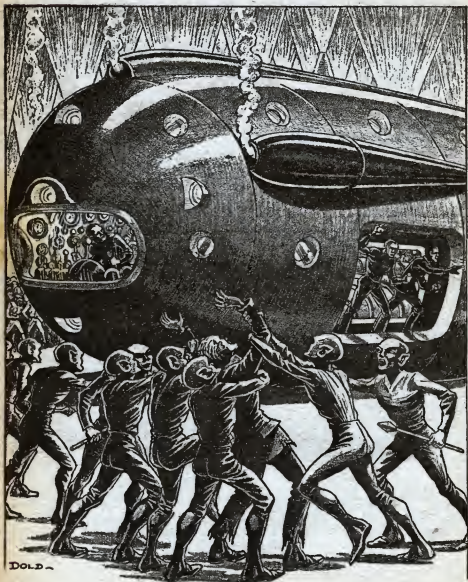
JUPITER SEEN FROM GANYMEDE

on the November

Astounding Science-Fiction

THE SUN-WORLD

NAT SCHACHNER *tells of*
Sun was formed about their planet—



Both Solardi and Earthners had frozen in mutual astonishment. Then suddenly the Solardi were struggling to swing the heavy weapon to bear on the Earth ship.

OF SOLDUS

*four humans fighting a race so old the
with the Solar System as the prize!*



IT WAS hot within the triple-insulated shell of the *Sunbeam*. In spite of aerating apparatus, in spite of alternate vacuum and asbestophor layers, the curving walls dripped bubbles of wet steam. The small but efficient laboratory hissed with billowing fog.

But the men inside did not seem to

mind. All their faculties were absorbed on the task in hand. Two of them were stripped to the waist, their muscular torsos glistening in the haze. The third, a smaller man, dark, immaculately dapper, was fully clad. His suit of somber hue was buttoned up to the neck, the white stock above it prim with starch. His thin face was devoid of ex-

pression and perspiration alike. He stood neatly to one side, doing nothing, watching the other two.

The blond giant tossed damp hair out of his eyes. His brawny hand dripped with the sweat of his brow. "Damn it, Vic!" he said cheerfully. "The gelatin on the plates is beginning to crawl. Those pictures you're taking won't mean a thing."

"Can't help it, Jerry." Vic Haskell, astro-physicist, bent over the camera attachment to the helioscope, deftly slid another plate into position. The sweat was pouring in rivulets down his lean, athletic body. Tall himself, well-proportioned, he was nevertheless dwarfed by the gigantesque figure of Jerry Ives, millionaire space-sportsman and daredevil hunter of the armored *liseros* that lurked in the Venusian swamps. "This is our last chance to find out what's wrong. In another two months the spots are scheduled to reach maximum again."

Jerry Ives wiped sweaty palms on his faded dungarees. "I'm seeing spots right now," he growled. "Look at that needle jump. One-forty Fahrenheit and still moving. I expected to be ray-blasted some day, but never to be roasted to a turn."

The small dark man barely seemed to open his lips. "Carry on!" he said mildly. That was all. Vic Haskell glued his eyes to the coelostat arrangement while his fingers twisted with swift precision at the micrometer screws of the spectro-heliograph. Even Jerry Ives, grumbling, nevertheless washed the plates hastily in the developing bath as they fed automatically out of the instruments. Split seconds in that ruinous heat meant the possible difference between a smudged crawl of surface and a picture.

Caspar Burdock, small, blank-faced, eternally buttoned and always dapper in his stiff white stock, did not look like much. A humble key-pusher perhaps in the Accounting Department of

a trading corporation. At most a low-grade clerk in a minor section of the Civil Service. Actually, Burdock was the eyes and ears of the all-powerful Council of Ten who ruled the planetary system—Number One in the Secret Patrol, with a roving commission of unlimited authority.

The heat grew more stifling within the tiny confines of the space craft. Even the tinted lenses on the instruments could not keep out the blinding glare. The two younger men looked like demons in a blast inferno. The older and smaller man still was immaculate in his choking costume.

Jerry Ives stared at the last plate he had developed. His snort of disgust sounded like the gurgling of a drowning man. "It's no go, Vic. The pictures are beginning to look like cubist designs. No rhyme or reason. Might as well give up before we sizzle."

Caspar Burdock, in the background, did not move. Only his eyes seemed alive. "Carry on!" he said softly.

VIC WHIRLED on him, resentfully. His vision was bleared; the instruments were beginning to dance insanely. "I don't know how you do it, Burdock," he almost snarled. "You must be made of asbestophor yourself, with glycerin in your veins instead of blood. We're already closer to the Sun than any man has ever been before. And not a single test has disclosed the slightest reason for the terrible sunspot outburst of eleven years ago. What makes you think——?"

The little man smiled. He smiled only with his lips, but his eyes were glowing embers.

"You are wrong, Haskell," he observed quietly. "We are not the first."

Jerry Ives stared incredulously. "Come now," he protested. "Stop kidding us along. Whoever was crazy enough to have gone closer to the Sun, and when?"

"That," Burdock bit off his words, "is a Council secret. But I'll tell you this. You, Haskell, know it as well as I. The sunspot cycle has been steadily growing more and more severe for the past century. The last series was terrific. It disrupted all communication between the planets for a month, caused electrical storms of devastating intensity as far as the moons of Jupiter."

"I know that," Vic inserted. "That's why I was willing to come along. But there is no evidence now——"

"It is our duty to find the evidence," the Council agent said with surprising energy. "In two months more the period of maximum disturbance begins again. Unless we discover the cause for the progressive increase in intensities, the Council fears——"

The door of the laboratory slid violently open. A man in the horizon blue of the Space Service staggered in. His uniform was wilted, dripping. With an effort he held himself upright, saluted the all-powerful agent of the Council.

"Captain John Cushing reporting, sir," he spoke hoarsely. "We'll have to stop—turn back. The crew have mutinied. They claim it's suicide. No other ship has ever dared venture past the orbit of Mercury. We're already within 11,000,000 miles of the Sun's chromosphere and accelerating steadily. The temperature in the rocket rooms is over 160 degrees. Three of the men are unconscious. The others——"

The little man seemed to increase in stature. His voice cut across the Captain's protestations like a whiplash. "Mutiny? On Council business? You know what that means, Captain."

The officer's eyes wavered. "Yes, sir," he muttered. "But——"

"Get back to your job, Captain Cushing," Burdock said in a terrible voice.

Cushing towered over the little man for a moment with clenched hands, then

collapsed. "Yes, sir," he saluted, and was out of the door.

The blond giant grinned. "Nice going, Burdock," he observed. "It's a grand thing to have the backing of the Council."

The agent turned on him. The intensity in his eyes died. A serious look spread over his small, dark features. "It's more to know that perhaps the fate of billions of people depends on you."

"I wish you'd let us in on it," Vic grumbled. His head swam. The glare through even the coelostats from the vast disk of the Sun made spots dance before his eyes where there were no spots. "So far I've not found the slightest sign of anything wrong on the Sun. As for the progression of sunspot maxima, that might be due to natural causes. I've calculated——"

THE WORDS died on his lips. His wandering eyes glued feverishly to the eyepiece of the small but powerful tele-scanner.

"Found a sunspot before the due date?" demanded Jerry.

But the little man was already at the physicist's side, gripping his shoulder with a terrible grip. "What do you see?"

Vic shoved him off with a twitch of athletic shoulders, continued to stare. Then, suddenly, he swung away, blinking, blinded. His sweaty face was puzzled. "It may be only a meteor," he admitted.

Burdock lost all decorum. He hopped from one foot to another. They had never seen him act this way before. "Meteor be damned!" he screamed. "You know damn well it's no meteor, Haskell. You'd never have stared like that if it were. What—did—you—see?"

Vic said slowly, "If it weren't screwy, I'd say it was an artificial projectile sliding through space, straight from the Sun itself!"

The agent's face lit up. "I—I knew he'd manage it somehow," he whispered. "A brave man. A very brave man!"

"Who?" the two young men cried simultaneously.

"What the devil are you talking about?" added Jerry Ives profanely.

But Burdock's small, dark face was alive with anxiety. "Where is the projectile?" he snapped. "What are its bearings?"

Vic Haskell moved quickly to his instruments, focused spiderweb lines, set automatic tracers on the strange little waif far out in space. Styluses raced, integrators clicked, figures flashed upon the numerating screen.

"A million, three hundred and ten thousand miles away, at ten-sixteen, Solar time. Angular velocity to our course, plus fourteen——"

But the Patrol Agent of the Council was already at the intra-communications board. Lights glowed, died. The haggard face of Captain Cushing appeared upon the screen, startled. His mouth was set and grim, a short range flash-gun snouted in damp fingers. Sullen, half-naked members of the crew staggered about the rocket chamber, cowed by the pointing gun. Five men lay limp, unconscious on the floor.

"Good work," Jerry crowed appreciatively.

But Burdock paid no attention. "Captain Cushing!" he snapped. "Mr. Haskell will give you the figures. You will set the course of the *Sunbeam* to intersect that trajectory. At the intersection you will find a small, smooth meteor. You will grapple it to the ship—with grappling tongs, mind you, not with the magnetic plates. Draw the object into the forward entrance-port, leave it there untouched. Do you understand?"

Cushing saluted with left hand. His right held the gun. "Yes, sir."

Vic reeled off the coördinates. A howl of rage and mingled fear burst from the

hapless crew. But Cushing snapped them forward with his gun. "Get busy, you swabs!" he gritted. "The first man who makes a break dies!"

"A very good man!" grinned Jerry, as the screen faded. "Even though he lost his nerve for a moment a while ago."

Vic's eyes were speculative on the little man. "So you know what the projectile is made of," he said softly. "Even that it is nonmagnetic. Don't you think, Burdock, that it's time to take us into your confidence?"

"Not yet! It's too big a thing to let loose until I'm absolutely sure. Even to you two. You've been patient so far; bear with it a little longer."

It was the first time the powerful agent had condescended that far. "Right you are," Vic answered frankly. "We'll play along."

The *Sunbeam* shuddered over in a swinging trajectory. Straight for the immensity of the Sun it sped, straight for the shining little meteor that hurtled up to meet it. Silence became a live thing within the throbbing chamber.

Closer, closer, while the chamber steamed, and the men within gasped for breath. Then, while the temperature needle stuttered around 162, and Vic felt darkness press upon him, the vessel shook with the sudden thrust of out-reaching grapples. There was a faint thud, a creaking of once-smooth working locks—a final triumphant slam.

Then the *Sunbeam*, like a hunted hare, wheeled in an abrupt arc, fled back through space to the comparative cool of trans-Mercurian distances.

WITHIN THE Earth-laboratory of Vic Haskell, astro-physicist, three men clustered breathlessly around a yellow-white projectile. Its shape was not unusual—smoothly tapering at both ends—a typical message-carrier that was part of the regular equipment of all space-vessels, to be used in emergencies when radio and other methods of communica-

tion were disrupted. But its color, the curious consistency of its surface, were not those of the regular molybdo-beryl employed. It was like no metal or alloy known to Vic.

Caspar Burdock glanced swiftly around. They were alone within the well-equipped lab. All the assistants had been packed out posthaste. A line of Council guards surrounded the building, forbade all entrance.

Jerry Ives stared down at the little Council agent from a height of six-foot four. "Seems like a lot of precautions to open a message-carrier," he remarked. "Reminds me of stories I used to read as a kid about the old days before the Planetary League—spy stuff, hush-hush secrets it was death to know."

"In this case," Burdock replied quietly. "it may be death *not* to know—death not only for ourselves but for the whole Solar System."

"For Pete's sake, then, open it!" Vic cried with a touch of impatience.

Burdock hesitated, took a deep breath. It looked to Vic as though he were afraid of what he would find. Then his fingers moved rapidly over the control springs. The inner mechanism whirled; there was a groaning, creaking sound. But the nose did not swing open on a hinge, as it should.

"It's stuck," Jerry said unnecessarily.

The Agent's face grew darker. There was a strange fear in his eyes. "No!" he whispered. "It's fused. Quick, have you got some sulphuryl chloride?"

"Of course!" Vic answered. He took a bottle off the shelf, handed it to Burdock. "But why not use an electric arc-cutter?"

"Twenty thousand degrees would not even scar this material. And only sulphuryl chloride will dissolve it." The little man worked swiftly. He dipped a thin glass tube into the corrosive stuff, ran the dripping point around the yellow-white metal.

As the liquid touched, it began to hiss.

Little bubbles frothed up, exploded with little pops. Deeper, deeper, ran the etching groove, until—neatly as if an electro-arc had been employed—the nose dropped to the floor.

Carefully, yet with a certain fierce impatience, Burdock thrust his arm within the hollow chamber, withdrew it. Within his clutching fingers was a sheet of linter note paper, of the type employed for intra-communication on spaceships.

But the exclamation of triumph died on his lips. The edges of the paper—resistant to ordinary heat—were charred and curling, and big brown splotches discolored the rest.

"By the *lizers* of Venus!" cried Jerry, "that message-carrier must have practically skimmed the surface of the Sun."

The Agent withered the giant sportsman with a look. "This was," he said, "*within* the Sun."

Then he spread the crumbling paper slowly out upon the table, while Vic and Jerry, burning with curiosity, crowded over his narrow shoulders.

II.

THE WRITING on it was an almost unintelligible scrawl, as if it had been done in terrific haste. Some of the words were charred, half-obliterated. But what remained read as follows:

"*Help! . . . prisoner of the . . . center . . . Sun. They are about to . . . System . . . danger . . . planned . . . spots . . . maximum . . . Two parties, . . . peaceful, . . . I am trying . . . coming . . .*"

The words trailed off into a wavering line. The rest of the paper was a blackened char. There was no signature.

"It just doesn't make sense," growled Jerry.

But Vic uttered a startled cry. "By God, it not only makes sense, but incredible sense at that! Listen! It's a

call for help from someone who is a prisoner of some race in the center of the Sun. They are about to attack the Solar System. We are all in danger. The attack is planned for the period of sunspot maxima. But there are two parties at odds within this race, one of them peaceful. The writer is trying to work with the peaceful party, or to prevent the other from attacking—it's hard to say which. As for the last word, judging from the trailing scrawl, it sounds as though someone was coming while he was getting off this message. He had to cut short, shove it into the message-carrier, and send it on its way."

"This is absolutely the craziest nonsense I ever heard," Jerry Ives said angrily. "A human being inside the Sun! A race of Sun-people! Melodrama about danger and sudden attacks. Don't you guys know what it's like inside the Sun? We've been wasting our time on some fool practical joke—and a pretty clumsy one at that."

Vic said: "Shut up, Jerry! It's no joke. That metal container is made of no planetary metal."

"But it is," Burdock said quietly.

"Eh, what's that?" queried Vic, startled.

"I don't know just what the formula is," confessed the little man. "The specifications are sealed within the vaults of the Council Chamber, deposited there eleven years ago."

Vic's eyes narrowed. "By the man who wrote this note? Eleven years, a sunspot cycle. Eleven years——" He gripped the Agent fiercely. "By God, it's impossible! Waldo Maynard!"

"Yes! Waldo Maynard!" admitted Burdock.

"That's nonsense," broke in Jerry. "Maynard was lost in his private space-cruiser. A collision with a stray asteroid on the Jupiter voyage. Smashed his vessel to powder. Everyone knows that. The newscasters were full of it. Greatest astro-physicist in the world, specialist

in Solar phenomena, and so on."

"The newscasters lied," Burdock told him calmly. "Or rather—they took my official handout at face value. This is the truth. Maynard was worried about the increase in the number and intensity of the sunspot disturbances. Back in 2684 he appeared before the Council. I wasn't an Agent then, but I heard about it afterward. He propounded some pretty wild ideas—claimed that the constant progression in intensity from cycle to cycle was not normal. That forces other than natural were at work. Claimed that intelligent direction was involved—that somehow there was grave danger to the System in what was going on. I've read the Council minutes. Here's an excerpt.

"The Martian Delegate: 'This intelligent direction that you claim, Mr. Maynard. Where would it come from? Our Patrol Agents report no disturbances on any of the planets.'

"Maynard: 'I did not say it came from the planets.'

"The Earth President: 'Then in Heaven's name where could it come from? Alpha Centauri—Sirius?'

"Maynard: 'No. From within the Sun itself.'

"The Council (amid loud laughter): Petition dismissed."

"Humph!" snorted Jerry. "And damned right! I'd have done the same."

BURDOCK stared down at the charred scrap of paper. "I thought so, too, when Maynard came to me in 2692. I had just been appointed Agent, and was pretty much pleased with myself. Fortunately—or unfortunately—he swore me to secrecy first—even from the Council itself. He had built a new type space-craft, he said. Small, with automatic controls so that he could navigate it himself. But the important thing was the composition of the sheathing, of the hull of the vessel."

Vic ran his hand gingerly over the

yellow-white structure of the message-carrier. "Like this?" he asked.

"Yes. It is an alloy, or alloy-compound, of half a dozen different elements. He wouldn't tell me the details. But it was heat-resistant and pressure-resistant to an incredible degree. He said he had tried it out in an electric fusion arc of 500,000 degrees Centigrade—had placed it in a crusher employing a force of 63,000 tons to the square inch. And it came out unharmed."

Vic whistled. There was awe in his glance at the fragile-seeming carrier. "Those are the highest temperatures and pressures man has been able to create."

Jerry's big, careless features were ludicrously screwed up. "Yet this—this metal is fused. Look how it ran and clogged up the hinge."

"Exactly!" retorted Burdock. "That's why I know the message is no fake. Only within the Sun are there temperatures and pressures higher than that. And deep within at that. The temperature of the photosphere is only about 6000 degrees Centigrade."

"But how could he have penetrated, granting even the impossible? The Sun is——"

"He had a theory that the sunspots—which we have known all along to be vortices of flaming gas, hydrogen chiefly, with an admixture of calcium and titanium oxide—were actually much deeper than we ever believed. In fact, it was his conclusion that they penetrated to the very central core of the Sun. He considered them as funnels to the interior, fields of force that somehow resisted the unimaginable pressure of its walls, and were obscured at the surface—where the sustaining force was weakest—by intruding clouds of chromospheric gases.

"The strange regularity and systematic progressive increase in the sunspot areas during the past century convinced him that intelligent beings had

taken control of what had been before a purely natural phenomenon. He was certain that this intelligent direction was fraught with menace to the rest of the System. Therefore he intended, he said, to investigate for himself in that specially built craft of his. He would take no one else along, because, as he admitted, it was practically a suicide venture. Nor would he announce it to the world. The Council had closed the incident in consideration of his immense services, but others might believe him a dangerous lunatic."

"Yet he came to you," interjected Vic.

"Because he had to leave some knowledge of his plans—of his new discovery. He gave me the formula to seal up. It was just before the time of sunspot maximum. I'll never forget his earnestness. 'If I don't come back,' he told me, 'as is very likely, wait eleven years for the cycle to return. Then cruise as close to the Sun as you can. I'll manage to get through a message to you somehow,' he ended confidently."

"And he got his message through," whispered Vic.

"By the triune rings of Saturn!" Jerry swore. "He was a brave man, even though it still sounds screwy."

VIC WHIRLED on his friend. Jerry Ives had gone along at his own insistence. It was his money that had financed the trip. Burdock had been unwilling to use Council funds, for fear of being made into a laughingstock in case of failure. "Was?" Vic blazed. "Maynard is still alive. That note was recently written. Look at it again. They are *about* to attack the System, it says, at the period of sunspot maximum. That will be in some two months."

He strode over to the young giant, almost poked his finger in his eye. "Two months!" he repeated.

"Hey, take your finger out of my eye!" yelled Jerry. "What about two months?"

Vic backed the bigger man against the wall. "Two months in which to build a new spaceship of Maynard's material—two months in which to take off and penetrate into the Sun to rescue Maynard."

"You're crazy!" retorted Jerry vigorously. "I'll have no part of it."

"We'll need a good deal of money," Burdock added in speculative tones. "I couldn't tell the Council—yet. I can guarantee swift construction work and total secrecy. But the money——"

"Oh, that?" quoth Vic cheerfully. "Jerry Ives is just dying to contribute. He's filthy with unearned increment, you know. Has a finger in every mine from here to Pluto."

"Now I *know* you're crazy," yelled Jerry. "If you think you can get another cent from me——"

"SHE'S A BEAUTY, isn't she?" observed Vic Haskell with obvious satisfaction.

"She ought to be," groaned Jerry Ives. "Cost me ten million. I could have outfitted a hundred swell hunting trips to the ice mines of Pluto for that."

"I think," interposed Caspar Burdock gently, "you will find the hunting even better—and far more exciting—on this trip."

It was a month after the discovery of Maynard's hapless note. During that time the three men had barely eaten and never slept. Night and day they had worked, in a terrible race with time. The plans had been unsealed. Vic had set to work at once. The alloy contained seven different elements never before used for such purposes. A strange admixture—yttrium, thulium, hitherto inert xenon, radium-X emanation, molybdenum, bromine and martium, a long-term radioactive gas first discovered by Maynard himself in occlusion within the spongelike ice at the Martian poles. Full directions were appended for the making of the new alloy.

But only the vast authority of the Council Agent could have put it over. He had peremptorily commandeered all available supplies of the precious materials, sent a secret expedition posthaste to Mars to gather the martium gas, placed a thousand PCC men (Planetary Conservation Corps) at the sole disposal of Vic and Jerry. He appropriated an island asteroid that an absentee Ganymedan magnate had made into a private estate at immense expense. Complete with intense-gravitated atmosphere, transported watercourses from Earth and Venus, sunken gardens warmed by sub-atomic interior fires and profuse with rare blooms from every planet in the System.

It was in the largest of his fabulous sunken gardens that the *Suicide* was being built. The name was Jerry's bright idea. "Never was truer name," he had grinned.

And now the *Suicide* rested in its cradle-pit. Yellow-white, cigar-shaped, the *ultra* in speed, power, navigability and automatic controls. It carried a heavy armament, too, for a craft of its size. Mesh screens of interlocking force, torpedo tubes, blast guns, and hand grenades of intra-atomic disintegration. "We may need them," remarked Burdock significantly.

Jerry's face lit up. "That's the only part of this whole idea that made me decide to take a hand," he said eagerly.

The small asteroid was deserted except for the trio. All workmen and technicians had been evacuated under oaths of secrecy. It would not do to start a panic.

"We're going blind," Vic had said. "No sense in taking along a heavy crew. Three men are enough to win through to Maynard——"

"Or die," added Burdock quietly.

"We won't die." Jerry flexed a great arm on which the muscles rippled smoothly.

Vic stared at the signal on his wrist,

"Time to get started," he snapped. "In five minutes——"

Simultaneously their eyes lifted. The tiny planet revolved at a furious speed. Through its mile-high atmosphere gleamed the circling heavens. Far to the east, rising rapidly over the circumscribed horizon, came the Sun. A small, dim red ball, fraught with looming menace. Already the spots upon its flaming surface were growing fast, widening with accelerating speed, blanketing its surface almost from equator to the poles.

Already had the new extension of the disturbances aroused the alarm of the System. Only too vividly did it remember the fierce electrical storms, the devastation that had followed the last outburst. And now, from all indications, the new period of maxima would be of unprecedented severity.

Twenty-one days! Twenty-one Earth days in which to hurtle to the mighty orb, and seek to penetrate its terrible secrets.

Simultaneously the three men sucked breath. "Let us go!" said Vic.

WITH A SOFT roaring of motors, the *Suicide* spurned the little island in space, rocketed swiftly toward the distant ball of fire. Two days later a fuming Ganymedan magnate, puffy and fat, stared with furious eyes upon the once-sacrosanct confines of his private estate. Sunken gardens trampled, rare blooms drooping on their stems, scraps of metal, litter, all the detritus inevitable from the passage of a thousand men. He lifted pudgy fist, shook it futilely at the sky. "Damn that Council Agent!" he puffed. "It's getting to be a hell of a System when private property has no more rights. I'll send a letter to the *Solar Times*. I'll——"

But already the objects of his wrath were well past Mars, pushing the straining motors to the limit of endurance. Passing freighters, big space-liners, followed the yellow-white craft of strange

design curiously in their telescanners. It hurtled past their lumbering speed like a streaking thunderbolt, every rocket jet blazing with a reckless disregard of fuel.

Twice, space-patrol ships hailed them, but no answer came. Caspar Burdock might have avoided pursuit by flinging out the secret Agent's code, but that would have meant official attention by the Council—even, perhaps, a demand for full explanations.

So that startled cruisers gaped, sent harmless blasts after the already vanishing stranger, and broadcast hasty warnings to the inner patrols.

But by the tenth day the *Suicide* had flashed by Mercury. Within that dangerous orbit no ship ever ventured.

The Sun had grown from a small disk to a vast, overpowering blaze. Grimly the three men took turns at the telescanners, aided in the operation of the ship. The sunspot areas were increasing hourly. Already they obscured half the median belts of the Sun, were bursting out in new places.

Vic said tensely, "I've never seen spots like these before. Ordinarily, the edges are ragged, irregular, and the sizes range from a few hundred miles to a hundred thousand miles or more. But these are spaced at definite intervals, are uniformly round, and possess an even diameter of about three thousand miles apiece."

Jerry hunched great shoulders. "Looks like our friend Maynard was right. They must have been experimenting before. This time they're ready for the blow-off."

For the hundredth time the Council Agent demanded: "See anything suspicious about your tests, Haskell?"

The young astro-physicist shook his head. "Not a thing. Everything normal. Surface temperatures approximately O. K. Chemical composition of prominences, chromosphere, photosphere, flocculi, unchanged. In only one respect is there a difference."

"Yes?"

"In the intensity of the magnetic field within the spots. The Zeeman effect is terrific. I've never seen anything like it before. The spectral lines are split so wide I have difficulty in tracing them to their unitary source."

THE LITTLE MAN'S hand sawed unconsciously at the high collar of his stock. His dark suit was as tight and high-buttoned as always. His costume never changed—in Solar heat or Plutonian cold, at Council functions or wading through the Venusian swamps. "It's lucky," he whispered, "that Maynard's alloy is wholly non-magnetic. Otherwise we'd never get through."

"It'd be luckier still for us, maybe," Jerry Ives grunted, "if we couldn't."

Vic Haskell shivered slightly. "We'll have to fly blind. Every instrument we have will be ripped to pieces by the terrific stresses." Then he forced a grin. "I wonder just how much Maynard's alloy can take. My last calculation as to the temperature within the sun is suspiciously close to 45,000,000 degrees. As for the pressure——"

"Swell!" Jerry groaned comically. "Just about tepid to my tastes. And remember what Maynard's return message looked like."

"That was because the message-carrier had to force its way out through the almost solid surface of the Sun," Burdock retorted instantly. Then his dark eyes grew darker. "If you're afraid, Ives——"

The big man stared down at him incredulously. Then the red started to seep through his blondness. His great hands clenched.

"Hey!" interposed Vic quickly. "You've got Jerry all wrong. The old scow's a pessimist by habit—but you couldn't drag him away from danger with a brace of grapples. Why, he'd rather go on a forlorn hope than eat. And the Lord knows he's gluttonous

enough. I remember once within the Red Spot of Jupiter——"

But the tension had already relaxed. The little man smiled frankly, extended his hand. "Sorry," he said. "I didn't mean it that way."

The red died away. Jerry hesitated, then engulfed the proffered hand in his own paw. Then he grinned. "At that, you little bantam," he admitted, "you're right. I open my big mouth too much."

The spatiometer pointed to a little over 8,000,000 miles from the Sun. Closer than they had been the last time. Closer than any one had ever been before—with the exception of the half-mythical Maynard.

"At this time on our last voyage," declared Jerry with a cheerful rumble, "we were being baked to a nice, tender turn."

"And now the temperature hasn't shifted the fraction of a degree from its thermostatic setting," added Vic. "The outer hull of the *Suicide* shows 861 degrees Centigrade. So far the alloy is holding up fine."

"That's great," said the big man heartily. "Only 44,999,139 more degrees to go. A mere nothing." Then he glanced sidewise at the dapper little Agent. "Sorry!" he grunted.

But Burdock's eyes were glued to the instruments. "At a hundred miles per second," he said quietly, "it'll be only about two hours now before——"

Vic galvanized into action, startled. "By the moons of Uranus," he exclaimed, "we'd better get busy."

III.

SILENTLY, efficiently, they went to work. Now that the overwhelming adventure was so close upon them there was no more talk, no more horseplay. Each had his job to do, carefully planned in advance. Each man did it.

The delicate instruments, liable to magnetic disruption, were dismantled and carefully packed in silicon fiber.

Auxiliary instruments, much cruder in operation, but not subject to magnetic stresses, took their place. Heavy plates of alloy slid smoothly over all ports for protection.

This did not mean blind flying. By means of sensitive reflectometers, a limited band of light vibrations were converted to electrical impulses, forced in tight paths through the screening alloy, and flashed upon the visorscreens at any desired intensity.

The Sun was filling the heavens by now. It loomed ahead—a huge, molten lake of fire. So dazzling was its surface, so insupportable its blaze, that again and again Vic had to cut down the visorscreens.

The seconds ticked off, and the minutes. Each stroke of the chronometer seemed a swift advance upon approaching doom.

Vic checked their speed with the forward rockets. They were falling now—falling with gravitational pull and decelerating rockets. Five million miles; three million; one million!

Grimly Vic checked his auxiliary instruments for the last time. The outside surface of the *Suicide* showed 2400 degrees. Yet within, the aerating apparatus functioned with undiminished efficiency. He turned to the visorscreen. The pallid reflector of the Sun gleamed back at him, pock-marked with smooth, round orifices. Slender flocculi wisps streamed inward, as though sucked by an irresistible force. A spider line bisected a spot close to the equator.

The astro-physicist pointed. "We're heading straight for that one," he said steadily. "There's more chance of its not being a blind alley—of leading to where we want to go."

Jerry looked up from the grenades he was carefully laying out, grumbled irrepressibly. "I wish I knew where we wanted to go."

But the tension increased. Caspar Burdock sawed again at his stock, as if

for the first time in his life it had become uncomfortable.

They were dropping fast now. Vic had cut the deceleration. The tremendous gravity of the Sun sucked them down.

Closer! Closer!

Even at minimum intensity the visorscreen showed a blinding surface. Then, suddenly, from the swirling rim of the Sun something shot up. Like a huge waving tentacle it came, red, gigantic, expanding with an incredible velocity, rushing straight for the blue marker that charted the *Suicide* in space.

Involuntarily Jerry ducked. "Look out!" he yelled.

The next moment the huge red flare engulfed the dot. The very next, the space craft rocked and reeled in a roaring maelstrom of flame.

"A Solar prominence!" gasped Vic, leaping for the controls.

But even as his fingers gripped tight to set the ship back on its course, a new gust shook the staunch vessel until it shivered and groaned in every strut. Outside, the hull temperature showed at 6430 degrees. On the swaying visorscreen the Sun widened, seemed to leap up directly from the shimmering surface. The spots had disappeared. In their place was a seething, swirling cauldron of incandescent gas.

The roar was terrific. It penetrated the triple-insulators; it filled the rocking interior with blasting sound.

"We're within the spot," shouted Vic, twisting with every ounce of strength at the gyrating controls.

The Agent had been flung like a sack against the farther wall. He was reeling painfully to his feet.

Jerry Ives, clutching at a cushioned support, stared wide-eyed at the speed-counter. "Lord!" he yelled. "Seven hundred miles a second! Blast off the forward rockets, Vic, or we'll smash to kingdom come."

"Can't!" Vic shouted back. "The

rockets wouldn't mean a thing in that hell outside. We're being sucked down into the interior of the Sun in a whirlpool of inrushing gas."

DOWN, DOWN, always down they fled, through an inferno such as none of them had ever dreamed could exist.

The temperature needle spurted. 25,000! 70,000! 180,000! 340,000! 496,000! 531,000! Then, with a straining heave, the needle snapped off at the farther edge. It was not geared to take higher temperatures, unimaginable on Earth.

"It must be over a million now," Vic shouted to make himself heard.

"And it's beginning to get damn hot!" growled Jerry in return.

It was! Little globules of moisture gathered on the yellow-white walls, coalesced and dripped in damp runlets to the floor. The aerators whirled valiantly, but the atmosphere clouded, shimmered with mounting heat. The men began to gasp.

"We're done for," remarked Burdock with quiet intensity. "It's already 162 Fahrenheit in here, and going up every second. Maynard's alloy could stand so many million degrees, but no more."

"Yet he managed to survive," cried Vic, ripping the clammy shirt from his shoulders.

"At least," spoke Jerry, his huge bulk dim through the steamy haze, "we've stopped tumbling."

Vic staggered to his instruments, wiped them carefully, peered at them with half-blinded eyes. "We must have dropped through the photospheric gases. We're falling free now."

"At what speed?"

"One hundred and forty miles a second."

"What a swell smashup we'll make at the bottom of this hole. Roasted nicely on all sides—then flattened out, pancake style."

Every breath was a torture. Heated

air, like live steam, seared their lungs with every gulp. Blindly, groping, they dipped linen cloths in the tepid water, held them tight over their nostrils. It gave but little relief.

"Why in blazes don't you strip the way we did, Burdock?" came Jerry's muffled voice.

The little man was swaying from side to side. There was restrained agony on his face. His hand moved toward the high, neatly folded stock, limp and dripping at last. There it stayed, came fluttering away. A new horror had appeared on his dark, perspiring features. The man was incurably modest.

"How far do you think we've fallen already?" he cried in a strangled voice.

"It's hard to tell," answered Vic, wiping his eyes. "The spatometer stopped working. Maybe 200,000 miles."

The Agent groaned. "Still over 200,000 miles to drop!"

Jerry stumbled through the hissing fog. "I wish I knew how many millions of degrees it is outside," he gasped. "Bet you it's close to the 45,000,000 mark already."

"We'll never know." Vic fell limply against the stanchion that supported the instrument panel. There was a peculiar drag on his feet; a sudden feeling of weight that ordinarily was not perceptible in space flight. The intense heat had exhausted him, of course—had sapped all the strength from his legs.

THEN, with a great effort, he pushed himself erect. His feet were like lead now; his heart hammered and tried to push its way up into his throat. A hoarse cry burst from his lips. He forced his weighted eyelids open, stared at the instruments.

"We're decelerating," he almost screamed. "Look! The velocitometer! It's registering only 56 a second—now it's 53!"

"It's broken," Jerry rumbled. "Another instrument gone to pot. Now

"we'll not even know——"

"Can't you feel the deceleration lag your legs, you fool?"

The Agent's face emerged from behind its screening cloth. It looked distorted in the whitish steam. "I—I think," he managed to ejaculate, "it's not as hot as it was."

Vic groped for the bolometer. "By Deimos and Phobos! You're right! It's only 134 now."

Already the haze was lifting—condensing in little cascades upon the curving walls. They stared at each other incredulously. What mighty force was retarding their fall? Why was it getting cooler? They must be nearing the very center of the Sun, yet——

Animated by a single thought, all eyes turned to the visorscreen. A simultaneous groan burst from their lips.

The visorscreen was a featureless gray. No sign of rushing walls, of flaming, swirling, incandescent gas, was left. Either the reflectometer had broken, or else——

There was no question about it now. The pressure upon their legs, on the organs of their bodies, had become almost insupportable. Limply they swayed against their cushioned straps, seeking ease from the terrific strain. Steadily the temperature dropped. Once more they could hear the cooling whir of the aerators.

Then there was a slight thud. A last crushing weight pressed upon their chests. All motion ceased.

Slowly, unbelievably, they staggered to their feet.

"We—we've reached the center of the Sun!" husked Burdock.

"But what——" started Vic, and stopped short.

Outside, through the hull of the *Swicide*, came a sound. Tappings, measured blows, beating out a regular tattoo.

"Signals!" whispered Burdock. "Listen to them—long—short—long—short—long—long—short—long. There's in-

telligent life, down here." His voice lifted unaccountably. "And more—that's CQ! General attention call—Waldo Maynard! It's he! Quick—open the port!"

Vic gripped the little man as he lurched toward the controls. His face was taut, listening. "Wait a moment. That's space code. It's telling us something."

Silent, breathless, they crouched within the dripping interior, intent upon that measured drumming. Long thuds, staccato raps, spaced in a definite pattern. Slowly it took form and substance in their minds.

"Men of the System! Men of the System!" Over and over again, "Waldo Maynard signalling—Waldo Maynard!" Then the repetitions died. New thumps succeeded, racing, hurrying, slurring long and short together in a frenzy to finish.

"Go back! Go back!" they spelled out. "For Heaven's sake, go back! Warn the System! In five Earth days the Solardi will attack. Force fields—strange new weapons. Quick! Blast off before it is too late!"

"That's Maynard!" gasped the Council Agent. "Giving us warning! Hurry, Haskell, let loose the rockets. We must move——"

Jerry Ives towered over him. His big blond face was set as in a mold. "First," he said with deadly calm, "we get Maynard."

"You can't. Once we open that door—— The System is more important than one man. There are billions——"

AS IF the man outside understood, the blows on the shell redoubled their frantic haste. "Men of the System—are you alive? Don't you understand? Take off while the guards are still relaxed. Already they're getting suspicious. I told them I knew how to get you out. They're coming closer—they're shouting angrily. Don't mind me.

Hurry—" The last staccato blow ended in a sickening scrape along the hull. The signals ceased. A wild pounding took their place.

"You see," cried the Agent, wriggling unavailingly in Jerry's bearlike clutch. "Maynard's right. We must get out—"

Vic's face was a hard granite. "Get to the rocket tubes, Jerry. But don't blast until I give you the signal," he said. "And don't let Burdock spill the beans." Already he was across the floor, grabbing up a fistful of the tiny hand grenades.

"I get you, Vic!" the big man grinned. "Come on, Burdock. We'll blast off, all right—but only after Vic is through."

The little man ceased struggling. His dignity returned. "You can release me now," he said quietly. "You're both of you damn fools to pit one man's life against the safety of the System—but I'm with you."

"Good bantam!" Jerry approved, and let go. Burdock picked up more grenades and quietly stuffed his pockets. Vic lunged for the exit-port. The Council Agent was at his side. Outside the banging had risen to an inferno of sound. Then there was a sudden hush.

"I don't like that," whispered Vic as he reached for the mechanism that opened the slide. "They're up to some mischief. Now listen. As I let go, we both shoot out to the entrance-slide. After that—"

"I understand," Burdock said calmly. "Open it!"

The mechanism whirled; the inner slide went noiselessly back. Both men plunged through into the equalization lock, hurled themselves toward the outer slide.

At the very edge they jerked to a halt, mouths agape, frozen in their tracks.

Before them stretched an incredible sight!

A brick-red terrain extended on all

sides as far as the eye could see. A land kiln-baked, hard as diamond, gleaming with a pale interior luster. Smooth, level, undifferentiated by hill or valley, stream or forest—all the inequalities, the play of light and shade that make of Earth a thing of joy and beauty.

But from its surface reared spaced towers, thrusting cone-shaped dazzlements of orange high into the atmosphere. From their pointed peaks new cones appeared—inverted, shimmering, lambent with the play of many colors—funnel fields of force that shot up and up to the very roof of this strange interior world.

It was that roof which brought the sudden gasps to the lips of the two Earthmen.

HIGH ABOVE, a domed vault that cupped the brick-red land to the farthest horizon, flashed and coruscated in molten flame. A seething, roaring furnace beyond all Earthly conceptions, a blazing inferno that temporarily blinded the eyes of the beholders.

It was only the little man's choked cry of warning that brought Vic's smarting gaze back to the danger that threatened them both.

For the reddish plain was alive with creatures. Creatures shaped like men, yet of a green-gold hue. Men attired in skin-tight costumes of canary yellow, with angular, diamond-hard features and slitted eyes to keep the pouring light from blinding them. In their hands were little rods shaped like double cones, laid base to base, and rounded at the points of jointure.

A dozen of them were banging furiously with hard, angular fists upon the yellow-white hull of the *Suicide*. Another dozen were dragging away a skinny, elderly man with faded clothes of Earthly design, and tossing, unkempt hair of gray. To one side, a third group were busy with a curious wide-mouthed funnel of orange hue, mounted on a

swivel base, which they were swinging around to bear upon the *Suicide*.

Both Solardi and Earthmen had frozen in mutual astonishment at the unexpected sight of each other. But the white man's strangled cry of warning, the echoing cry of Caspar Burdock, brought both opposing groups to instant life.

Strange, clashing syllables, like the crashing of broken glass, poured from the Sun-men's acute, rhombuslike mouths. The double cones lifted. The creatures at the swiveling funnel swung it hastily around.

But Vic and the Council Agent acted with the instinctive speed of long practice. Up swung their arms, out flung tiny grenades. One sped for the group close to the ship—one for the bunched Solardi around the pointing funnel.

The little balls sailed in an arc, fell to the hard, smooth ground. There was a tremendous flash, a furious detonation. The triggerlike compounds, on impact, released their immense store of intra-atomic energy, expanded into elemental gases.

The two groups vanished in a hurtling pall of destruction. The *Suicide* rocked and reeled in the blast of light and sound. The third group, struggling with the white-haired Earthman, fell flat on their faces. Then, with harsh cries, they stumbled to their feet, cast weapons aside, and fled screaming across the plain.

Vic, flung against the outer wall, recovered his footing and catapulted forward. "Maynard!" he shouted as he ran, "get into the ship, quickly."

The old man picked himself up from the steel-hard ground and staggered toward him. Blood streamed from his cheeks. Vic caught him as he was about to fall again, lifted him easily as if he were a child, raced back to the *Suicide*. Burdock was waiting tensely. As Vic flashed through the port, the doors slid into position behind him. Jerry Ives,

at the controls, yelled *At-a-boy!* and punched controls simultaneously.

There was a roar, backward jets of released rockets, and the cigar-shaped ship lifted into the red-tinged atmosphere.

IV.

THE RESCUED Earthman's skinny face contorted. His eyes, indomitable still, blazed with an almost uncomprehending joy. "Thank God!" he cried brokenly. "Thank God you came! I had given up all hope of ever seeing a human face again."

Caspar Burdock shook him warmly by the hand. "It's eleven years since we saw each other last, Maynard. I was sceptical then of your claims. I am sceptical no longer. True to my promise, I cruised close to the Sun, and found your message-carrier. We raced back to Earth, unsealed your plans. Thanks to the genius of Vic Haskell here—a young man who is also an astrophysicist—and the aid of Jerry Ives, that husky youngster over there, we duplicated your own craft, managed to penetrate to the core of the Sun. We were just in time, it seems."

The old physicist shook all their hands. Tears glistened in his tortured eyes. Eleven years of hardship and ill-treatment, eleven years of sickening waiting, knowing himself helpless, knowing that his captors were intending a mass attack on the System of his own kind, had not sapped his vitality. But this rescue did.

"I had given up all hope," he whispered. "It was a desperate chance I took sending off that message. For years I waited for a sunspot opening to appear. When the first tiny one took shape and form, I dared not wait any longer. Every moment meant a century. I had secreted the carrier against just such a day. My own machine is in the hands of the Solardi. But they haven't fathomed the composition of the

alloy yet. And even though they tortured me, I refused to tell them." He displayed his skinny arms with a certain shyness. They were scarred and blackened with deep grooves. "My body," he explained, "is like that too."

"I never knew you personally," said Vic Haskell with reverence. "I was still at the School of General Learning when you were supposed to have been—uh—lost. But I knew your reputation. Your discoveries in our special field to this day are the basis of all our work."

Maynard's face lit up with a childlike smile. It was evidently the first time he had smiled in years. "It is good to know that one has not been forgotten," he quavered.

"Sorry to break up this love feast," Jerry broke in suddenly. "But just now we're up against a pretty desperate proposition. How in blazes will we manage to get out of this hole, so as to bring news back to the System?"

The old man's face went haggard. "We can't," he said simply.

"What do you mean?" exploded Burdock. "You had said——"

Maynard shook his head. "I know I did. If you had heeded my warning and gone then, you might have managed to win back through one of the sun-spots. The Solardi would have been taken by surprise. But now every one of their force-towers is on the alert. They'd suck you back at once—or close the gaps, if necessary. Look!" He pointed out through a quartzite port-hole.

They were flying irregularly over the brick-red landscape at an elevation of some fifty miles. From this height, the curvature of the land beneath was obvious. The home of the Solardi was a stationary ball, centered at the core of the Sun, about 4000 miles in diameter. Around it beat the luminous, reddish atmosphere. High above, circumscribing, held at a distance of a thousand miles by mighty forces, rimmed the

blinding, unimaginably hot, unimaginably compressed mass of the Sun.

Beneath, under the quartzite magnification, there was disclosed a scurry of movement. From the towers the force-funnels leaped, glowing with stronger hues. But above, on the dome of the Sun, no further openings appeared. The black-seeming cavities that had radiated upward through the molten mass like spokes of a wheel were gone. Nothing remained but featureless, solid flame.

"They've already closed the gaps," said Maynard quietly. "And now they'll swerve their force-fields to catch your craft, suck it down within reach."

THE THREE Earthmen looked at each other blankly. For a moment there was hushed silence, broken only by the irregular roar of the rockets as they swerved and dipped to avoid possible attack.

Jerry's big blond features took on a bright smile. Vic recognized the signs. Whenever a fight impended, whenever hopeless odds opposed, the young millionaire smiled like that.

"Then we'll beat them at their own game," Jerry said with casual gayety. "I'm going to dip down and blast them with every weapon we've got. Torpedo tubes, blast guns, and those little play-things—the grenades. I've already got our interlocking screens in place. By the time we'll get through with them, they'll be ready to talk peace."

"None of your weapons will be any good," Maynard interposed in a monotonous voice. "I've been with them for eleven years—and I know what they have. Your first assault caught them off guard. They're prepared now. In the first place, they live in underground cities, deep within that terrifically hard substance of which their planet is composed. You could never blast them out. In the second place, they utilize forces unknown to the System, against which

your screen of vibrations would crumble like paper tissue."

Jerry stared at him. Then he took a deep breath. "Swell!" he said finally, with a harsh laugh. "What are we to do then? Lie down and quit cold?"

"No! There is still one small chance. Not all of the Solardi are determined to attack the outer System. There is a party here—I believe I mentioned it in my warning message—who are peaceful by nature. They do not see the necessity of making war on the inhabitants of the System. True, they know it is absolutely essential for them to get away from their old world in this period of sunspot maxima. But they would be content to go peacefully—to seek a measure of accommodation with the System Council. Unfortunately, they are in the minority."

"Where are they?" demanded Burdock eagerly.

"I was coming to that. They inhabit a small territory on the other side of this world. They are friendly to me. In fact, when I crashed through, it was they who picked me up. I was well treated at first. I learnt their language, and they learnt the language of the System from me. I was quite a curiosity, I tell you." Then he interrupted himself. "But wait! First let me set the controls to take us to their territory."

Under his expert fingers the *Suicide* swerved, darted like a flaming comet at a sharp angle to its former course.

"It was only later," he resumed, "when the other faction of the Solardi listened to my unwitting talk, that things went bad. They seemed too eager to find out all about our weapons of warfare, our populations and their distribution, our Patrol System. But it was especially when they tried to find out the formula of my alloy that I became suspicious. I tightened up—refused to talk any further. Then they showed what they really had in mind. They

threatened. I wouldn't budge. My first friends in Tab—their chief city—protested. Especially their Prince, a splendid fellow, named Kra.

"But the other faction was in the overwhelming majority. They were headed by a Prince called Anga, a giant in size—even slightly larger than our friend here, Jerry Ives."

Jerry grinned. His big hands fisted. "I'd like to meet the gentleman," he chuckled.

But Maynard shuddered. "I hope not," he demurred. "Anga is a bad egg. He came with a band of his warriors during the sleep-period and kidnapped me. I've been in his power ever since. Only the stubborn idea on his part that he could eventually get the information he required out of me has kept me alive." His face twisted. "If what I went through could be called life."

AGAIN there was silence. Vic felt a surge of impotent anger. If only the chance would come to avenge the old man's sufferings!

The Council Agent, face impassive, broke the silence. "Then your original wild theories were correct, it seems."

"More even I dreamt in my topmost flights of imagination. The increase from cycle to cycle in the sunspot areas, the new circular regularity of them—all had convinced me that there was an artificial cause, and that it was directed from within the Sun, incredible as that sounded even to my own ears. But I never anticipated this."

Vic stared out at the rushing sunscape. "It still looks impossible," he murmured. "It's against all the laws of physics and mechanics as we know them."

"Not at all," came the surprising answer. "We've always known the fundamental laws that govern this set-up—but we never dreamt of applying them on such a vast scale. Actually what

happened in the very beginning was this, as near as I could determine from the scientists of the city of Tao.

"It seems that our later hypotheses of the origin of the System are only half truths. Much depended as well upon a queer, inverse form of the older nebular hypothesis. Evidently the sun was once a spiral nebula. Gradually, in its whirling motion, a core formed at the center, composed of the heavier elements. A combination of friction and further compression fused them, brought them to incandescence. A miniature sun was born, not much larger than this present world of Soldus, surrounded by a vast spiral nebula."

"But how," frowned Vic, "did that lead to what we see now?"

"It's simple enough. The small sun cooled through the ages. But as it cooled, it grew spongy. It contained the heaviest of the elements, and we know on Earth what happens to platinum, for example, under certain conditions of heat and pressure. As a result, caverns formed beneath the hardening crust, in which water coalesced to form lakes. A certain crumbling made a soil. Soon life came. But not, it seems, a primitive protoplasm such as came eventually to the outer System. The tradition is that an exploratory expedition from some other star crashed with their spaceship on the little world. Unable to take off again, and not finding the essential materials to rebuild their vessel, they settled within the caves, evolved anew the civilization they had known."

"Then they were trapped?" Jerry wanted to know.

"Exactly. Meanwhile the nebula around them was becoming incandescent, and settling down upon the new-formed world. But the Solardi had brought with them the secret of the force that causes cosmic expansion."

"But that force," protested Vic, "acts in inverse ratio to the force of gravitation. Whereas gravitation is inversely

proportional to the square of the distances between two bodies, the cosmic force is *directly* proportional to those squares."

The old man nodded. "You're quite right, Haskell. That is why we have observed its repelling powers only on a cosmic scale—in fact, in an expanding universe. But the Solardi had solved the secret of controlling this terrific force, of condensing it, so to speak, on planetary scales. By means of it, they were able to hold the nebula in a safe roof above. They filled the space between with an atmosphere somewhat like our own, but with added elements of ionized helium and other gases that filter out most of the wave lengths of light and heat. Such an atmosphere would blanket the Earth, even in full day, with icy cold and utter darkness."

"I wondered," nodded Burdock, "how we were able to survive under the fiery dome of the Sun."

"In time, the nebula coalesced into a tremendous Sun around them. But the cosmic force they employed, which streams up in a spreading funnel from those towers, was powerful enough even to withstand that incredible gravitational weight."

"I SUPPOSE," suggested Vic, "that our outside System of planets was formed in the way we have always believed. Another star coming close to the Sun, creating huge tidal waves of flaming matter which spun off into space and in time coalesced into separate planets."

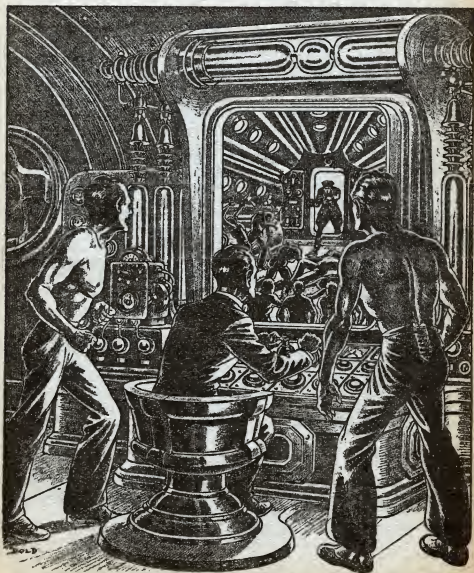
"Yes."

"But weren't the Solardi and their inner world of Soldus affected by such a cataclysm?" Jerry asked.

"In their records, which go back to shortly after what must have been the first landing, there is mention of a huge catastrophe billions of years ago. The circumscribing Sun heaved in giant agonies. In spite of all their hasty ef-

forts, flaming portions tore off and fell to the surface of Soldus. Half their population was wiped out—a good many of their towers destroyed. But then the incalculable pressure lightened, as if outer parts of the Sun had been torn away as well, and they were able to crawl out of their caves and rebuild the damage done.”

Caspar Burdock stared out of the lower port. His small, dark face was somber; he was no longer listening. What profited ancient history, when their own lives—and more important still—the fate of that outer System, hung in the balance. Would he ever see the cold pinpricks of the stars again? Would Earth, green-clad, ever revolve welcom-



The Captain's voice roared from the vision screen. "Heat or no heat, you'll work those tubes, ye crawlin' maggots! And there'll be no mutiny!"

ingly to his return?

But the scientific spirit was uppermost in Vic. He had almost forgotten their predicament in this bewildering story. "Have they any explanation for the mystery of the sunspots," he queried eagerly, "and their strange eleven-year cycle?"

Maynard shook his wasted head affirmatively. "The sunspots are caused by the application of their cosmic-force repellers. They represent weak places in the Sun's structure—faults such as cause earthquakes back on Earth. The terrific power of the cosmo-repulsion ferrets out these faults, swirls upward along them, widening and blasting them open. In the process, space itself ridges into swirls and gives rise to tremendous magnetic forces."

"Then how were we able to penetrate the channel against their repelling action?"

"By the time it reaches the outer surface, the force has weakened to an infinitesimal fraction of its original power. And the Solardi can reverse the process at will. Unfortunately, I had been discovered thrusting out the message-carrier along the cosmic field from one of their towers. It was too late for them to recapture it, but they suspected its import, and were expecting your arrival."

"And the eleven-year period?"

"That represents the life of the cosmic-expansion generators themselves. Approximately every eleven years they are charged afresh, and achieve maximum power. Thereafter, they decline slowly to a safety-margin limit, when they are charged again. Maximum of interior power means maximum of outer spots; minimum within means practically a smooth surface above."

JERRY SWERVED from the locked controls. "If they're so civilized and satisfied here on Soldus, why the devil do the Solardi wish to erupt and attack our System?"

The old scientist smiled wanly. "That question will have to wait. We've arrived at our destination. And we'd better hurry, because I see behind us the pursuing ships of Anga's men."

Startled, they stared out of the rear port. A fleet of curious-looking space-fliers were streaming behind. The cone seemed to be the favorite design of the Solardi, even as the sphere was the most usual construction of the System. Like their weapons, the spaceships were two cones, placed base to base, welded, and the angular points of juncture rounded and streamlined.

From the sharp forward point an inverse funnel spread out even as they watched. It shimmered and leaped in widening volume across the intervening space.

Maynard sprang to the controls. "If we get caught in that," he cried in alarm, "we're lost. It's a pocket edition of the cosmic force repeller."

The *Suicide* gyrated and spun under his handling. Other glowing cones reached out for them. The Earth-craft did loops and banks and twisting spirals. The many-hued fields closed in upon the frantic vessel, hemming its vain gyrations into more and more narrow compass.

"Whew!" Jerry whistled, clinging to a stanchion for support. "Almost got us that time. The next——"

But Maynard knew what he was doing. Eleven years of agony and despair had sloughed from his shoulders. They were straight, erect now. A grim light illumined his haggard features. Warily he watched his chance. Even as the cones of force tried to close in an unbreakable pattern, he darted the ship through a fast narrowing slit of freedom, plummeted to the brick-red ground.

"Hey!" yelled Burdock. "You're going to crash us!"

But even as the nose of the *Suicide*, at perpendicular angle, was within a hundred yards of the surface, the steel-

hard smoothness seemed to yawn. The craft catapulted down into darkness, decelerated on a retarding cushion, and came to rest. Above them, the gap had closed silently into unbroken sheathing once more.

"I knew Kra wouldn't let me down," the old scientist said with satisfaction.

V.

EVEN AS HE spoke, light glowed outside, orange-yellow, soft on the eyes. On the visorscreen appeared a huge, artificially smoothed cavern. A group of Solardi, green-gold in hue, angular of face, clad in skin-tight yellow garments, stood quietly in the center, eyes directed on the invading spaceship. Similar in most respects to the Sun-men among whom the *Suicide* had first descended, but perhaps of more rounded angles, of more human features. One, slightly taller than the rest, stood a little apart, his arm raised as if in greeting. None of them had weapons.

"That's Kra!" observed Maynard. "Thank the Lord he saw us coming! Here in Tao we're safe—temporarily at least—from Anga and his hordes."

He slid open the ports, rushed out. "Hail, Prince Kra!" he cried. "It is a long time since I saw you last."

The three Earthmen looked blankly at each other.

"I wouldn't trust any of these Sun-birds," grumbled Jerry. "Fill your pockets with grenades."

"Nevertheless," the Council Agent answered with decision, "we've got to take the chance. Come on."

They stepped outside, blinking. Kra had come forward with stately tread to meet Maynard. His eyes were almond rather than slitted. His rhombuslike mouth opened. "Welcome back, Maynard of Earth!" he spoke in precise English, stressing the vowels, however, and flattening their roundness. "We

had followed your rescue in our screens with the greatest of interest." He shrugged his angular shoulders a bit sadly. "We could, of course, do nothing to aid you until you appeared right over our city of Tao. Prince Anga is too powerful for our few numbers. But who are these——"

The old man introduced them. "Vic Haskell—Jerry Ives—Caspar Burdock. They are men from my own System—men who had followed in my trail, seeking to find me when I did not return." He cannily made no mention of the message-carrier he had sent out with his call for help. "But how have things been in Tao since I was forced away by the men of Prince Anga?"

Kra smiled queerly. "Surely you must know what is happening, my friend. Surely Anga has told you."

"Only a little," the scientist replied cautiously.

"My poor subjects are gathering around their space-craft, ready for the tremendous journey. In three sleep-periods we take off. They are sad. For uncounted ages we have lived on Soldus—now we must seek the unknown again." He sighed. "We of Tao are a peaceful race. We would prefer to come to peaceful terms with that System outside which you have described to me. But Anga has other ideas. He and his men are more bellicose than we. And they have enormous numbers compared to ours. I foresee much trouble ahead—both for us and for your fellows who reside in that outside universe."

"I wouldn't be too sure of that," Burdock pushed forward boldly. "We also are a numerous race, peopling all the planets. We outnumber your Solardi a hundred to one. And we have mighty weapons of warfare that will blast your ships as they emerge from the Sun into nonexistence."

Kra looked with a certain degree of astonishment on this dark little man who

spoke so confidently. Then he smiled. "I do not think so," he replied. "Before Maynard of Earth was wrested from my protection, I held much conversation with him. Your most potent weapons are but childish toys compared to the mighty sub-space energy of the cosmo-units. Have you any power that would hold up the pressing Sun above us?"

BURDOCK fell silent in some confusion. He had tried a bluff. It had failed. But now Vic spoke up.

"Why," he demanded pointedly, "is it necessary for your race to leave this planet, and in such a hurry?"

Unutterable sadness appeared in the almond eyes. "Because," Kra explained, "it will be our final chance to escape before the ultimate cataclysm."

"What cataclysm?"

"Our cosmo-expansion repellers base their energy fundamentally upon primitive sub-space elements. Those elements—in the course of the eons during which we have lived and flourished within this immurement—have become exhausted. Our scientists, a hundred of your years ago, first discovered the lack. We made careful tests, found that the field of sub-space which our tower generators tapped had barely enough for another century. A great Council was held, and plans unanimously adopted.

"We had observed the waxing and waning of the fissures through the Sun above us with each fresh recharging of the towers. Before, we had not bothered about them. Now we went methodically to work. We strengthened the charges of certain towers, shaped these outlets into funnels through which our ships could easily pass. We increased their number. Each cycle we added to their number and size, carefully apportioning our precious sub-space reserves. Our final estimates showed there was barely sufficient energy remaining for this last recharging

to gain the greatest number of outlets, and to equip our space-vessels adequately for exit to the outer universe and for armament. Subspace is now exhausted."

"Completely?" queried Jerry. The familiar bright smile had settled on his carefree features.

Prince Kra observed his blond bulk with a certain respect. "We have drawn the very ultimate residue."

Jerry opened his mouth, shut it again. But the smile seemed to broaden. Vic said: "Do you think Anga will use force against you?"

The Solardian shook his head. "It has never been done before. There had been no quarrels among our race until Prince Anga poisoned the minds of his fellows for war and conquest. Because we refuse, he is angry. Now——"

On the curving, reddish wall of the cavern was inset a vast metallic disk. The disk now glowed with color. In its depths appeared a lifelike representation of the outer surface. Against a blazing orange sky hovered the duo-cone vessels of the Solardians. Within the largest of the ship, silhouetted against a separate oblong, stood a Sun-man.

He was gigantic, huger than any of his fellows, a full two inches taller than Jerry Ives himself. He carried himself with arrogance. His slitted eyes stared coldly from the visorplate at the men within the city of Tao.

"Prince Anga!"

It was Kra who spoke, mildly, yet with a certain dignity.

The pictured representation narrowed its eyes almost to closing. His rough-angled features turned more green than golden. "Kra!" he retorted harshly, "you are a fool! More, you are a weakling! Give up these spies from the outer System and join your forces to mine."

"Never!" Kra answered with energy. "They are friends of mine, and a Prince of Tao has never yet broken faith. Furthermore, I disapprove of your insane scheme of conquest and destruction.

Surely there is room for all of us on those outside planets. Maynard, the Earthman, has assured us of that time and again. If we but come peacefully we will——"

"Bah!" snorted Anga. "He lies! His race would trap us on some sterile planet, lull us with promises, then rise to destroy us. And in any event, we, Solar-dians, with an incalculable heritage behind us, will not dicker with these upstarts who have barely evolved into men. We will take what we will; if there be lands left over, they may huddle on them as our slaves."

"Nevertheless," returned Kra, "we shall not join with you. Our migration shall be separate, pacific."

ANGA'S FACE turned an even darker green. Then he chuckled suddenly. "Very well then, you fool! On your own head be the destruction. We do not need your paltry few. We go to conquer this new world. But you, and your men of Tao, will remain to perish miserably when the Sun collapses."

The Prince looked startled. "What do you mean?"

"You do not know then what has happened? To prevent the escape of these newly arrived spies with warning of our plans, I caused the cosmo-force to be reversed in all the towers. But such reversal causes a heavy drain of power. As a result—the period of maxima is past. Already the sun-passages are narrowing—closing up. By next sleep-period they will have narrowed to proportions through which our vessels could not penetrate. Therefore we leave within five *daros*. We are prepared. But you, my dear Kra, and all your witness followers, will remain to bear the burden of the falling Sun." He bowed mockingly. The metal disk dulled. He and his ships were gone.

For a moment there was stunned silence within the cavern. The Taons

moved closer to each other, said nothing. But on their gold-green faces there was a seated resignation.

Burdock said softly: "Five *daros*? How much time is that?"

"In our time," answered Maynard dully, "it represents six hours."

"Then let us get started at once," Vic burst out. "The *Suicide* is fully prepared, ready to go. As for Prince Kra and his men, he already said they were massing around their own ships."

Kra's eyes were sad. "They are all ready but one. That one would have been finished within two sleep periods."

"Well, what about it?" Vic retorted impatiently. "Crowd the excess into your other vessels."

"They are crowded to capacity right now."

"Then save those whom you can."

The Prince seemed to lift in stature. "You do not understand the laws and customs of Tao. No man of Tao saves himself at the expense of his fellows. We go together, or remain together—to die."

The Sun-men murmured approvingly.

Vic stared. "A magnificent sacrifice," he declared, "but not life."

"Nevertheless——"

"Wait a moment," Maynard broke in. "How many men are left over, Prince Kra?"

"Twelve."

"Twelve?" echoed Vic in a gust of relief. "We can crowd twelve more into the *Suicide*. Let us start at once."

"Just another moment." Caspar Burdock, Agent of the Council of the System, stepped forward quietly. He seemed more inconspicuous than ever. His neatly buttoned clothes and surmounting stock by some inner miracle had re-achieved their former immaculateness. "You all forget what we came here for. One part of our purpose has been gained. We have rescued Maynard. But the second—and far more important—is a total failure. More, by

our eruption into Soldus, we have lost for the System even the few days of grace it formerly had. What profit our escape if Anga emerges with all his horde and lays waste the planets?"

"But how can we stop him?" demanded Maynard in an access of despair.

"Prince Kra, perhaps?"

The Prince shook his head. "We are few and they are many. Besides, the Taons are a peaceful race. We shall not fight against your people, nor shall we engage in destruction with our own kind."

VIC SWORE under his breath. There was such a thing as carrying a theoretically admirable pacifism too far.

But a new voice broke in. It was Jerry Ives, who hitherto had held an unwanted silence. "Tell me, Prince Kra," he said. "This last unfinished ship of yours. Can it fly at all?"

"Of course. It is one of our regular communications vessels. But for the tremendous journey into outer space, its hull must be triple-sheathed against the fury of the Sun. We must——"

"Would you be willing to give it to me, personally, as is?"

Kra stared in some surprise. "Naturally. It is of no present use to us, now that your friends have so generously offered to take the balance of my people in their craft. But why do you wish it?"

The blond giant smiled. "Just to play around with," he answered cryptically. "Let me see it now, and explain the controls to me."

The Prince shrugged angular shoulders. "Very well, if you wish. Though I do not understand—— However, we must prepare at once. Already half a *daro* has vanished, never to return. Please come this way, all of you."

He led them through a vaulted passage. On either side they caught glimpses of huge receding underground

chambers—a veritable honeycomb in the curious brick-red texture. The sub-Soldusian city of Tao.

There were vast caverns that hummed with machines of strange shape and function. There were chambers magnificently equipped for sleep, for dining, for leisure and play. The walls were tassellated with glorious patterns, stamped on by some novel process. There were underground gardens; rooms from which sense-disturbing vibrations issued, caressing their flesh, filling their brains with truths never before apprehended. Others were laboratories, libraries in which whole volumes that represented the uninterrupted labor of an Earthly lifetime could be absorbed in a single flash of light.

The ancient civilization of the Solar-dians was of an extremely high order.

But the hurrying men had no time to catch more than tantalizing glimpses. They were racing to save themselves from inexorable doom. Prince Kra and Maynard were in the lead. Behind them were the silent Sun-men. Then came the three Earthmen.

Jerry quickened his pace. He seemed oddly anxious to keep from speaking to his fellows. But Vic and Burdock caught him on either side, gripped his arms firmly.

"Hold on," said Vic. "You're up to some mischief, Jerry. What is it?"

The blond giant turned innocent face from one to the other of his captors. "Who, me?" he replied. "You're crazy."

"You have a plan," countered Burdock softly, "to put an end to the menace of Anga and his cohorts. Don't deny it."

"All right then, I have. It's simple enough. Let Kra's ships and the *Suicide* get the jump on Anga's take-off by an hour or so. Scoot up the nearest sunspot exit. The combination of cosmic-expansion and your own rockets should get you through to the surface

within that hour, at the most. In the meantime, I'll take off with the Taon ship. I'll stack it full of our grenades. It should be an easy matter to cruise from tower to tower, drop a little love token, and meander on. Anga's forces will think my ship one of their own. By the time they reach for the sky, well—their sky will just close up and tumble down on them. No towers, no cosmo-force; no cosmo-force, and the Sun collapses ahead of schedule. Anga and all his horde become liquid gas at a temperature of 45,000,000 degrees—Centigrade, mind you!—and the System is saved. A pretty picture, don't you think?"

INVOLUNTARILY the others stopped, stared at each other. "Pretty?" echoed the little man enthusiastically. "Hell, it's perfect! It's the greatest thing that——"

"Wait a minute!" snapped Vic. "And where, my fine friend, will you be while all this takes place?"

"I?" Jerry Ives seemed surprised. "Why, I—uh—hell, don't worry about me. I'll be all right."

"Ohhh!" Burdock breathed, diminishing. "So that's it! You intend to die with the others. Don't interrupt," he warned, as Jerry showed signs of protest. "How else could it be done? Your ship couldn't get out even if there were still a passageway, which there won't be. All right, my boy, that's my job. I'm an official of the Council. I order you to——"

"Hey!" yelled Vic. "Both of you shut up. I'm the guy——"

They wrangled then, furiously, each clamoring for the honor to sacrifice himself for the safety of mankind. Jerry said nothing, just watched with his gayest smile. Then, suddenly, he acted.

His great fist lashed out, caught Vic Haskell squarely on the point of the jaw. The young astro-physicist staggered, went down heavily. Then Jerry whirled,

even as Burdock cried out, and connected again. The little man slumped without a sound.

"Sorry, old timers!" Jerry whispered to their unheeding ears, while he rapidly emptied their pockets of grenades, and transferred them to his own already bulging store. "But I had to do it. You'll be all right in half an hour or so."

Then, without a backward glance, he strode after the others.

He found them within a vast underground city, where all was feverish confusion. A hundred duo-coned ships rested in their cradles, ready for the take-off. More than two thousand men, women and children, the total population of the city of Tao, were at work. Supplies were being trundled on board, last minute repairs were being made, power machines of unfamiliar design hummed their full-throated song.

Calmly, Prince Kry organized the confusion, issued orders, directed the hurry and fever of forced departure into efficient channels.

"Hello!" Waldo Maynard greeted him. "Where are Haskell and Burdock?"

"They decided to go back and get the *Suicide* ready for the return," Jerry lied with a straight face. "Now look, Maynard! There's two things I'd like to have done. First, show me the crate Prince Kra has given me. Second, insist that the Taons take off as soon as possible. But in any event, at least an hour before Anga declared his hordes would depart."

Maynard looked surprised. "There's your ship over there," he pointed to a small craft—a local cruiser, obviously. Over its original shell, the beginning layers of a second sheath showed their bare bones. "But why the rush to beat Anga to it?"

"I think," Jerry said rapidly, "that Anga intends to rise with his fleet and

blast the Taons out of existence before he goes."

The old scientist looked impressed. "There may be something in that," he admitted thoughtfully. "I'll speak to Kra."

JERRY WASTED no further time. He darted over to the ship assigned him, commandeered a young Taon who had learned some English from Maynard, and raced over the essentials of the controls. They were comparatively simple, and in half an hour Jerry felt that he could master the craft.

Then he leaned out of the open port, shouted across the humming scurry to Prince Kra and Maynard. "How soon do you think you can leave?"

Low, rapid words passed between the pair. Then the Earth scientist turned and shouted back. "Within an hour and a half. That's just about the time you suggested."

"Good! Now please ask the Prince to open the roof so I can fly this crate out. I want to take her back to the place where the *Suicide* will emerge. You can pick me up there. And you'd better hurry to our ship at once, Maynard. Vic and Burdock are waiting for you. But be sure to take the path back by which we came. No other, under any circumstances."

"I don't see why——" the old man began, bewildered.

"Hurry!" the young sportsman screamed in stentorian tones. "For God's sake, don't argue! And open that roof so I can get out."

The Prince shook his head as at a man bereft. But he crackled out an order in the native tongue. Immediately, the furious blaze of outer day blasted into the underground city.

Jerry gave his ship the gun. She darted up like a thoroughbred; she handled easily. His last glimpse was of openmouthed denizens of the city staring after his flight, quite certain that

the giant Earthman was mad. And the more heartening sight of Maynard, shaking his gray head doubtfully, nevertheless trotting into the trunk-passage-way.

Jerry grinned wryly. "What a shock he'll get when he stumbles over my two pals! They're just about getting up, wondering what hit them."

A certain wistfulness clouded his eyes. He'd never see them again. Old Maynard, Prince Kra, Burdock, and—what hurt most of all—Vic Haskell. They had been close friends for years, and now——

He shook the strange moisture out of his eyes, settled down to work. He must hurry—*hurry*—HURRY!

He flew up to a height of several miles, then skimmed fast toward the horizon. He had determined upon his course of action. He would not touch the towers in this sector; upon their continued functioning depended the safe escape of his friends. But on the other side, in Anga's territory——

He passed five spaced towers without stopping. They were still too close. Around each one he saw signs of activity. Spaceships already trundled out from underground cities, hordes of gold-green men swarming like ants. They turned to stare at his solitary flight, then turned back to their work. Doubtless they considered him one of Anga's messengers.

But a cold sweat broke out on Jerry. Had the treacherous Prince in fact lied about the time of his departure? Was he trying to steal a march on Kra and the Earthmen?

His great face hardened. Even in this overwhelming case he had thought things through to a clear-cut decision. Better that all of them crash to instant death—yes, even good old Vic and the others—than that one of Anga's ships, equipped with the mighty cosmo-force, should manage to win through to the outer System.

Nevertheless a prayer formed on his lips. "Lord, let my friends get out in time!"

AT THE SIXTH orange-hued tower he swooped. A duo-cone vessel lay at its base. Sun-men were pouring into its hold. They looked up in alarm at the zooming ship, scattered for their lives. Jerry levelled off at half a mile, dropped a tiny grenade through the bottom port. Then he jerked frantically at the controls, pointed the nose upward again.

But, fast as he climbed, the shock of the tremendous explosion travelled faster. The little Solardian vessel rocked and reeled on the rushing tornado. Jerry, stunned and jarred, fought the craft to safety.

But underneath, where once a tower had stood, where just a moment before a hundred Sun-men and a spaceship had formed a pattern, there was now only a gaping hole. And above, the inverted funnel of many-colored force had vanished.

Jerry blinked upward at the burning ceiling of the Sun. It seemed to him that it sagged a bit. That might have been imagination.

On he sped, methodically, yet with a fierce inner compulsion. Tower after tower he came upon; ship after ship; city after city. At each he swooped and dropped his grim messenger of death.

By this time the alarm had been spread through the underground cities. Cosmo-units blasted up at him; space-craft frantically tried to take the air to destroy this harbinger of destruction. But a cold fury possessed the Earthman. The blasts passed him harmlessly by. He caught ships just rising into the air with the impact of his grenades, and rushed off to further towers.

By this time there was no doubt of it. The molten sky was sagging lower. In spots it bellied like a huge sow, pressing with unimaginable gravitational weight

against the skeleton support of the remaining fields of cosmic expansion.

"Lord, if only Vic is taking off!" groaned Jerry, staring at his wrist-chronometer with feverish eyes. The luminous pointer lay over 5:40 Universal Time. The very moment that Maynard had promised for the take-off.

He yearned to hold off a while, to destroy no more towers, to give his friends and the Taons a chance. But he dared not. Every second counted now. At each tower the defense grew momentarily stronger. The news had flashed around the world of Soldus. He might be caught in a funnel-blast—Anga might have taken alarm, rushed his own ships into the air.

Hurry—*hurry*—HURRY!

Then his heart gave a great bound. He had nearly circled the brick-red world. Behind him lay smoking ruins, but there was still here and there an untouched tower he had to leave intact in the haste of his progress. On their inverted fields of force rested the circumscribing Sun.

But now the ceiling was less than five hundred Earth miles above. It was getting frightfully hot. The Taon craft was not insulated against heat. And the lowering blaze was almost insupportable.

But straight ahead, Jerry saw a sight, and whooped to the unheeding air. A hundred duo-cone ships lifting up out of the city of Tao, flying with hurtling acceleration straight for the still-remaining sunspot openings overhead.

And in their company was a curious yellow-white, cigar-shaped craft!

Jerry's eyes smarted suddenly. He blinked, swallowed. There went his friends, and the peaceful Taons, out to the world of sanity and illimitable vastness. Out to new life and new adventures. While he—

For a moment he had an overwhelming desire to point the nose of his vessel upward and follow. Then he grinned.

He'd vanish into a puff of superheated gases if he did. They were insulated. He was not. And besides——

The instinct of the hunted made him swerve sharply. A blast of disintegrated air screamed past him. He swung in a tight angle, pushed his vessel forward at full speed.

Another duo-cone had come up fast. It was larger and heavier than his own. Instinctively, Jerry knew that he could not escape again. Already a premonitory shimmer glowed on the enemy's surface. Without hesitation he decided on his course. Vic and the others must have time to make good their escape. Soon the weight of trillions and quadrillions of tons would batter down the resistance of the remaining towers. But if this single ship of the Solardians should manage to crowd through the fast-closing gap, who knew what terrific forces they might be able to unleash against the System?

He struck the Solardian vessel head on. Too late it tried to swerve; it had not anticipated such an insane self-immolation. There was a terrific, rending crash—then darkness.

JERRY IVES came to his senses in a whirl of pain and agony. It was a weaving, strangely shaking world. He opened his eyes, looked hazily around.

He was lying on his back almost against the side of a great tower. Scattered around him was wreckage. The wreckage of two spaceships. Huddled figures of Sun-men lay on the heaving terrain. Some were unmoving; others were moaning and trying to crawl.

The overhang of the Sun seemed terribly close now. The glare of it was blinding. The heat was intense. Beneath him the ground shook and rumbled. On all sides the air was a fiery rain. Fragments of the down-pressing Sun dissociated themselves, streaked like huge meteors through the sizzling atmosphere, shattered the groaning world

with huge concussions. The frightful, compressed Sun-stuff exploded into normal matter with violence inconceivable.

Only four towers remained intact, bunched around the deserted city of Tao. Valiantly they thrust great funnels of force against the lowering Sun, braced it with precarious repulsion.

But the end was only a matter of an hour or two at most. Even the mighty push of the overloaded cosmic expansion units could not hold up that frightful roof indefinitely.

Jerry tried to lift himself up. He fell back with a groan. Pain lanced his legs. Both were broken.

As if in answer to his groan, someone spoke. He opened his eyes again wearily. A giant Solardian stood over him. Hate distorted the angular features, clouded the slitted eyes.

"Anga!" he whispered thickly.

"Yes, Prince Anga!" snarled the other. "You've destroyed half my men, crashed my private ship, almost brought destruction to all my plans. But I want you to know, before you die, that you have failed. Look, Earthman! Here come fifty of my ships, fully equipped, armed with cosmo-units. See, one of them is dropping to pick me up."

Jerry peered painfully aloft. It was true. They swung through the murky glare, disciplined, swift. One quit his fellows, pointed down to where their leader stood.

The wounded Earthman licked dry lips. "What good will it do you?" he whispered. "All avenues of escape are closed. Whereas the others——"

"You lie!" exclaimed Anga triumphantly. "There is still one tunnel reaching up through the Sun. It will last sufficient time to permit our passage. And once outside—we'll catch the weakling Kra and your System spies. Our ships are faster by far than theirs. Then on to conquest of the worlds of which Maynard spoke."

Jerry blinked incredulously up.

Above the spreading field of force that emanated from the tower against which he lay, a round gap still showed. A fault greater than the rest, pried open by the cosmo-repellent.

Already the darting ship had settled to the ground. Prince Anga turned for the open port, flung over his shoulder: "And as for you, Earthman with the broken legs, you will die——"

But Jerry was staring at his wrist-chronometer. Strangely enough, the luminous pointer still moved over the disk. Six: seventy-two! By this time Vic and Kra must have cleared.

He twisted his body around. His lips locked tight to hold back the groan of pain. His trembling hand plunged into his pocket, pulled out a grenade. There was a tiny pin that prevented juncture of the inner unstable elements. With a wrench that almost tore his broken body in two, he snapped it off.

Anga, triumphant, sneering, turned for a last look at the dying Earthman.

One foot was already inside the open port. He saw the clenched hand of his antagonist go feebly up. Something small and black lay within the cupped palm. With a cry of fear, the Solardian sprang.

But the fingers opened. The grenade fell in a short arc. Even as it left his hand, a beatific smile of utter content covered the tortured features of Jerry Ives!

The tower seemed to buckle inward. The steel-hard ground gaped and cowered. Tower, ship, Earthman and Solardians ripped into a million fragments.

With an indescribable roar, the long-withheld Sun collapsed upon its inner world. Quadrillions of tons of crushed electron-matter, incandescent with millions of degrees of flaming fusion, caught the fleeing ships, the shards of what had once been men, the puny orb that had defied its might so long, flashed them out of solid existence in the twinkling of an eye.

HARL VINCENT

returns to

ASTOUNDING

in November with

"The Return of the Prowler"



The transparent bulge of the respirator was still glued to the little doctor's face. He was out cold, but still alive.

THE CERES AFFAIR

Concerning the large—and worried—John West, and the small—but irrepressible—Dr. von Theil.

By Kent Casey

SO you see, General," the Secretary of War of the Terrestrial Government said smoothly, "I am really helpless in this matter. The Association of Commerce has been making severe representations to the Senate. They realize that your Department of Space Warfare has, of recent months, cleared the Solar System of the Uranian fleets which formerly harassed our planet. However, even with the convoy system which you have inaugurated—and which they find most annoying—Uranian depredations upon trade routes still continue. Since Earth now has definite military supremacy in space, they cannot understand why this state of affairs persists."

"Meaning, I suppose, sir," General Brumby growled, "that because they don't like the convoy system which makes their freighters reasonably safe, they want my scalp. If that is so, sir, you will have to oust me yourself. I refuse to resign under fire."

"Now, now, General," and the Secretary waved a plump hand. "There is no question of your being 'ousted', as you call it. However, the planet has a right to expect adequate protection from its fighting forces. I am inclined to agree with the Senate Committee that for some reason they are not getting it. After the Uranian fleet was destroyed in their own orbit last December, commerce raiding should have been stopped—and that without having to delay trade while you assemble your convoys. Space should be quite clear of menace by now."

General Brumby's jaw jutted forward

a little and his hands gripped the arms of his chair until the knuckles were white. "Smashing the Uranian fleet was only the first step, and gave us but one definite advantage, Mr. Secretary. Earth is now secure from attack. However, we destroyed only the enemy battle-fleet. There remain scores of swift enemy cruisers. They are operating singly, from a hidden base a long way advanced from their home bases. They constitute what we call a 'Fleet in Being' which forbids us to scatter our own fleet too widely along the trade-routes. As long as they can maintain that base, apparently rather nearer to us than to Uranus, their total suppression is comparable to abolishing a swarm of hornets with a walking stick. You hit one now and then, but a hundred others dodge you and sting before you can strike again. We have assembled considerable data on the course and direction of these enemy raiders as they have appeared. We are constructing curves which will eventually direct us to their hiding place. Then matters should proceed more swiftly."

"Indeed!" said the Secretary. "That will be gratifying. However, General, you and your Service are paid to fight, not to draw curves which may eventually find something. In short, the Senate is not pleased with you, General."

"You heard what I said," answered Brumby grimly. "I do not quit under fire. I took over the Patrol early in the war when bombardment of our cities was a weekly occurrence. My officers and men have made the entire

planet safe, and they have done it with starved appropriations, and at times with very inadequate tools. We have at last made it possible for properly convoyed freighter fleets to resume commerce with friendly planets. Given time, we will bring the war to a successful conclusion."

The Secretary's eyes grew hard. "I am sorry to see you adopt an insubordinate attitude," he said crisply. "However, I will at this time take no action. You will understand, General, that the affairs of the planet cannot await your convenience. You say that some problematical Uranian base is delaying the final triumph. Well, I may say that if such a base exists, it would be wise for you to find it and destroy it quickly. If the Senate still continues to receive complaints of interference with trade three months from today, I shall regretfully recommend your relief and transfer to the Advisory Council, placing some more active man in command of the Patrol. Good day, General!"

STILL SNORTING with suppressed anger, General Brumby returned to his office. "Orderly," he roared, "tell Captain West I would like to see him."

Big John West, a captain and the General's aide since the last fleet battle, entered quickly. "Sit down, West. I've been talking to the Secretary," and the General rapidly outlined his recent interview.

In the telling, much of his temper subsided. After all, it wasn't the first time he had encountered politicians, and it might not be the last. Brumby was a soldier—he wouldn't resign; but he had had his orders and would do his best to obey them. "That gives us three months, anyhow. I could wish almost that the Uranians hadn't been so quiet of late, for we haven't much to go on. I didn't tell the Secretary what the calculations seem to indicate, for we aren't certain; but we've narrowed the field

to be searched considerably. That base is somewhere between Mars and Jupiter, we think. Say somewhere around thirty million miles outside Mars' orbit."

West, who had silently grown angrier as the General cooled off, twitched his nostrils like an angry horse. "The dirty hound," he growled under his breath, then spoke aloud. "Beg pardon, sir—but I can't help getting sore. About this base. I've been wondering about something I remembered last night. It ought to fit pretty well with what's been worked out so far. How would Ceres fit in with the calculations?"

"Ceres? The big asteroid? That ought to about fit in both distance and direction of the curves. But even if it is about five hundred miles in diameter, there isn't enough air on Ceres to maintain a fixed base. As far as I've ever heard, there is no air at all. You could land in a helmet, but you couldn't live there."

"I think you could, sir," West answered. "Before the war I did a lot of prospecting on Ceres. I had to use a helmet, sure—and being all by myself I couldn't do much outside my ship. But I do know this; there's a gully through that big ridge of rock near the equator—you've seen it? Well, sir, on one end of the gully there's a steep, small waterfall—enough to serve a boiler—and right by it there's a seam of good bituminous coal at least fifteen feet thick. On the other end of the gully there's a natural basin that covers about two acres, with a pool of good water in it. It wouldn't take much work to house in that basin and make living-quarters, while you had your solar power-station at the other end of the gut. You could run an air-making plant and furnish enough power to keep shops and beam-chargers going."

General Brumby looked up, his face lighting. "You don't say! Would it be so easily and unobtrusively defensible?"

"A cinch!" West answered. "There's

only one place where the gully is over a hundred yards wide, and it is less than a quarter of a mile there. It's about three miles long. Run down the gully, a power line could be easily camouflaged. You'd have to roof your station to keep the air inside, but a little mica and aluminum paint would make it look from above mighty like the surrounding broken granite."

"By Jove, maybe you've got something!" the General said.

"Shall I go, sir? My Bruyere's over in the hangar."

"No, we can do better than that. Tilton's squadron is right near there now. I'll send him orders to take a look-see. If it isn't too strongly defended, he might reduce it if he finds it."

FOUR HOURS later, Colonel Tilton's report came in. His face, as it showed in the screen, was pale and tired, and his voice showed the effects of recent exertion. "The base is there all right," he stated, "just as you described it. They've got camouflaged air-roofs over both the power plant and the storehouse and shops. But the line runs almost openly down the gully apparently. We could see a big transformer where the valley is widest—but we couldn't do anything at all. They didn't do any damage to us, but we simply couldn't get within range to hurt them at all. They've got the toughest battery of force-beams I ever saw—bounced us back every time we'd get within a hundred miles in the quadrant the beams cover."

"Then how could you scout?" asked the General.

"We rode high on the west side of the ridge where the rocks protect them and looked over with a periscope projector ray. We could see—but so far we haven't learned how to shoot around a corner. To the east, where it is flatter country, their beams hug the ground. On the west they go almost straight up.

Only way to get at them is to cut through two miles of rock—and before you could do that, they'd have beams ready to blast you out of your mine. It's a honey of a set-up. We'll have to starve them out, I guess."

"No time to do that, I'm afraid," the General said. "Return to base with your squadron. We'll have a conference. Maybe we can cook something up."

"Aye, aye, sir," said the Colonel and the screen faded.

"Hm-m-m," mused Brumby. "Any ideas, West?"

"Yes, sir!" cried West. "I know that part of Ceres as well as I know these barracks. On the west side of the gully—where they haven't any protection to prevent a landing—there used to be a cave that runs right through the ridge. It isn't conspicuous, and I doubt if they've bothered about it. I only discovered it by accident—dropped my prospecting hammer down a cliff and went after it. On the east side, the cave ends in a hole not more than eighteen inches across. You can see out of it, but it's practically invisible from down in the gully. The Colonel says there's a big transformer along there. If you'll let me go tonight, I might be able to sneak up there and crawl through the cave and beam down that transformer with a Morrell pistol."

"No, West. Not good enough. They know they're discovered now, and you'd only put them more on their guard. They could repair the transformer without much difficulty."

West's face fell, then brightened. "Listen, General! You're right about that, but I bet we can find a way to fix it so it won't be repaired."

"How?" asked the General skeptically.

"Put it up to Dr. von Theil! We've got three months. Let the Uries quiet down for a few weeks and get over expecting us right away. The professor

maybe can think up something I could use that would do a better job than a Morrell."

"That's a good idea. Do you know where the doctor is?"

"Yes, sir, I think so. He was talking to me over the visor last night—wanted me to come see him in Baltimore. Said he had a new case of Scotch."

THE LITTLE professor was finally located at his boarding house. His pink face was morose, and his white sideburns jutted belligerently at being disturbed. General Brumby asked Von Theil to come to the conference to discuss ways and means of reducing the newly discovered Uranian base.

"Bah!" was Von Theil's reply. "You don't give me coöperation when I want something. Why should I come and listen to your young scientific men talk a lot of foolishness?"

"Why, Doctor," answered the General "when have I failed to coöperate with you?"

"I wanted John West to come to Baltimore last night. He said he couldn't because he had to work. So I can't have my party."

"I didn't know anything about it, Doctor, but West did have a lot of important work to do last night. There really is a war, you know. That's why we need you at the conference."

"Pfu! with your conference! I don't like conferences. Why don't you tell your young scientific men what you want without any conference and have them do it?"

"That's what the conference is for. Just to tell them what must be done. I doubt their ability to find a solution in time, and West and I agreed that if anyone could do it, you could."

"And get myself into arguments with whippersnappers, eh?"

"No, Doctor. Just to hear what the problem is and help us work on it."

"I don't work that way. I'll come

listen to your problem and I will probably know the answer just like your young men should know it if they weren't all full of new ideas—and a lot of them aren't so. If I know the answer, I will do it myself. West will take me there and I will bring him back after we do what is needed. What is needed?"

"Can't tell you over the visor, Doctor. No telling who's listening in. I'll send a ship for you at two o'clock."

"Better let me taxi him down here, sir," West said as the professor grumbly consented and tuned out. "He and I get along fine. I think it is because he gets a kick out of puzzling me."

It was not an easy matter, however, for West to smooth Von Theil's ruffled feelings. "War or no war, here I plan my work so I get a free day and some good Scotch. You don't come, so I don't know yet how good the Scotch is, and you got to drag me on my free day to listen to something simple."

Instead of two o'clock, it was nearly three before West succeeded in getting the little professor into the ship and whisking him to Washington.

THE GOVERNMENT scientists, assembled for the conference, were also in a bad temper at being kept waiting. They also were busy men; but General Brumby was firm. "We will wait for Dr. von Theil," he insisted.

"The Great Atavism?" asked one of the physicists sarcastically. "The old fossil who keeps harping on the Twentieth Century?"

It was at that precise instant that Von Theil entered the room. "Sure," he snapped. "The old fossil who has sense enough to know how much they found out in the Twentieth Century and how to use it. Don't forget that, young man. I take the Twentieth Century principles they found and the laws they indicated, and I use 'em to solve problems. The General can tell you that."

"Why don't you make some of these solutions public, then?"

"Yes, so some bright young man can write a paper about it and some crook find out how to be a more dangerous crook, eh? Bah!"

"Gentlemen!" the General interrupted. "Please be seated, and we will get to business. I have called you here to state for you a problem which must be solved in a very short time."

He proceeded to outline the situation on Ceres. "You can see," he concluded, after a chart of the asteroid had been marked by Colonel Tilton, and West had indicated the location of the cave, "the crux of the problem is to destroy the power line. As long as they can maintain their force-beams, they can be reduced only by starvation—and that would probably require over a year. We have less than three months."

As the scientists debated the problem, Von Theil's expression grew cherubic. For nearly thirty minutes he remained silent, lolled back in his chair and patting his fingertips. Finally, when a half-dozen suggestions had been made and rejected as Brumby or Tilton pointed out their weak spots, the little man rose and reached for his hat. "General," he said silkily, "I told you this conference would be foolishness. You have West get a little ship ready to take me there—let's see, this is Wednesday—say we start Tuesday next. That will be all right."

"What do you mean, Doctor?"

"What you think I mean? West will take me there and I will put their power line out of fix so they won't get it put together again in a hurry."

"What's your plan?"

"I don't talk. I do things. Besides, you would go fussing around and wanting to send two thousand people when one will do. West will get me there, and he don't argue with me. He does what I say."

"How long do you expect to be away."

"I don't know how long it will take to fly there; but when I am there, say—oh, four, five hours should do. Then all your ships can come pick up the pieces and your bright young men here can try to figure out what happened when I use some Twentieth Century fossil stuff!"

The sarcastic young physicist snorted. "Rot!" he exclaimed. "Give your reference for such a bluff as that."

"Sure Mike!" Von Theil chuckled. "Go read the papers written in 1936 by the Canadian Clayton. And when you read them, you will be just as dumb as now. It takes an old fossil to make use of knowledge after he gets it!" and he strutted from the room.

GENERAL BRUMBY'S idea was to send the fleet as convoy to the expedition on "Tuesday next," but West respectfully but stubbornly opposed him. "I know the Doc like a book," he said. "He told you that if I'd fly him there he'd do the job. If he sees a lot of ships buzzing around, he won't go and the party will be off. He's stubborn as a short-circuited robot, sir."

"But, West! Now they know that Tilton found them, they'll have called in their cruisers in expectation of an attack. You might get there—but you'd never get away. And before we could get there in force, whatever damage he does might be repaired."

"General, if Doc says he'll wipe out that power line, I'll bet it stays wiped out! We won't fly my Bruyere—it's too light. But if we can have one of those new heavy-shielded Comets and a good long-range gamma-gun, I can keep a lot of 'em off Doc until he gets the job done."

"I don't like it," the General said. "Even if he succeeds, the chances are pretty plain that there will be too much left for you to handle alone."

"Well, sir," West said, "suppose, after we take off, you have Colonel Til-

ton follow well behind—say a million miles or so. Of course, if I get into a fight, the visors will be blanked out by the Urie fire. But I could send a gong-note on the electromagnetic arc of the Fessenden if I needed help or when it's time to come mop up after Doc has done his job. Then they could come running."

So it was settled, although the General remained dubious, and the discontent of the fleet officers was loud and long. However, it was apparent that West's contention was right. The expedition depended for its success on the good will of Dr. von Theil; and having stated his terms, the irascible little Dutchman was adamant. "John and me and no foolishness!" were his last words.

At West's suggestion, the plan to have the fleet follow was kept secret, for even that might have been taken amiss by Von Theil. Moreover, West took especial pains to see that the little Bruyere racer in which he had flown the professor on previous trips was dismantled in the shops before Tuesday, so that he would have good reason to give for taking the larger and less comfortable fighting craft.

General Brumby himself flew Von Theil to the drome when Tuesday arrived. He explained that West was busy getting the ship ready, and had figured that the professor would prefer not to have any "outsiders" mixed up in the preparations. To his intense relief, he found the little man smiling and entirely ready to go. The only flaw on the doctor's horizon was the fact that he was tugging a heavy cubical case about a foot high. "No," he answered Brumby's offer of help, "I carry this myself. Not even John can help with this. This is the gadget that will do the business. Thank goodness it will weigh only about a pound and a half when we get it on Ceres, so I can take it through that long cave all right. But it is a nuisance. I hate to travel with a lot of foolishness."

NOT UNTIL the little ship was well on her way did West outline his plan of action to the doctor. "You see, Doc, there will probably be a lot of Urie ships near enough to come in a hurry if we're discovered. You say it may take you four hours, but Ceres goes around so fast that it won't be dark where we land more than about two and a half. I'll land you and get you started into the cave, then I'll have to take off and sort of patrol around until it's time to come get you. If nobody spots us, how will I know when you're ready to be picked up?"

"You watch that gully. I think you will know it all right when I'm through."

"O. K. And if I don't see anything, I'll come back in about six hours, anyhow, huh?"

"You will see something all right. Now—you say that on the gully side the cave opening is just about eighteen inches?"

"Yeah, maybe a little less than that across and maybe a little more up and down. But not much."

"It better not be much!" grunted the professor. "If it is, maybe I blow myself to blazes too. And that would be too bad. Nobody but whippersnappers left to get the General out of messes!"

West's next anxiety was to persuade the professor to listen to instruction in the proper wearing of space helmets. "You can't breathe without one, Doc. There's hardly a trace of air except in the bottom of the valleys and it's too thin to be any use there. Your head'll pop like a balloon without one!"

Dr. von Theil fussed and fumed, but was finally persuaded. "Pfu!" grumbled the professor. "Some afternoon, I take an hour off and make a decent sort of mask for this business. Pressure suits are bad enough, but helmet—bah! Imagine my whiskers in a helmet! Leave my whiskers out of this!"

West timed his arrival carefully,

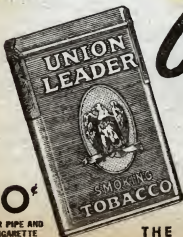
(Continued on page 145)

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Hartford	WTIC	4:30	Newark	WOR	5:30
Bridgeport	WICC	4:30	Chicago	WGN	4:30
Providence	WEAN	4:30	Detroit	CKLW	5:30
Portland (Me.)	WCSH	4:30	Washington	WOL	5:30
Worcester	WTAG	4:30	Syracuse	WSYR	5:30
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			Buffalo	WKBW	5:30

"THE SHADOW," master avenger of crime and scourge of the underworld, is heard on the air every Sunday afternoon and is featured in a book-length novel in THE SHADOW MAGAZINE twice-a-month.

(Continued from page 142)

slowly following the shadow of the tiny planet and landing on the back of the ridge just as the short Cerean night began there. "I wish I could go in with you, Doc, but as long as the ship's aground she has no protection. An Urie might spy her and come put us both out of business."

"Oh, that's all right," Von Theil said as jauntily as his makeshift respirator allowed. "You would be no use anyhow. You watch the fireworks and come get me." And carefully hoisting his square box, he vanished into the cave, guiding himself by a fluorescent flashlight which would make no visible beam from the outside.

West reentered the ship and took off as rapidly as possible. He even took the chance of helping his acceleration by throwing on his cosmic-ray screen before he was clear of the ground, and the resultant bound of the little ship caused a momentary "black-out." It was well he did, for when his eyes cleared, he had barely time to twist the little Comet out of the path of an Uranian cruiser that was charging him with her ray-guns ablaze.

So I didn't succeed in sneaking in unobserved! Well, Doc's well inside now, anyhow. Maybe I can keep this baby interested and lead him out to where the Colonel's gang are. Boy, am I glad I made a bouncing take-off! If he'd caught me without a screen, it would be good-night nurse by now.

METHODICALLY, West turned loose his gamma-gun, sending charge after charge of radium emanations into the enemy's screen and watching for the telltale faintly luminous areas which would indicate "soft spots" where a destructive alpha charge could get through. The Uranian, however, did not continue to fight in orthodox fashion. He dodged and twisted.

Why, you'd think the big goof was

afraid of me! But if he is, why the heck don't he lam out of here, instead of just trying to keep off my line of fire?

Then, suddenly, West stiffened in his seat and swore aloud. "He's trying to get between me and the ground! He had a spy-beam on us when we landed and it's Doc he's after, not me! No time to call in Tilton now. Boy, this is going to be a dog-fight!"

West's surmise quickly proved to be right. As he altered his tactics, so did the Uranian. It was apparent that but one thought possessed the hostile commander—to find out and destroy anything or anybody which had entered that cave. Consequently, the cave-mouth must never be left unscreened. West's task was constantly to keep the heavily armored Comet between the Uranian and the mountainside, so no destructive ray could be launched which would destroy the little professor before he could carry out his mission. There were few stunt-flyers who could compare with West, but he outdid anything ever imagined possible in the way of acrobatics as the battle went on. "Like a couple of lucky-bugs in a puddle!" he panted after nearly an hour had gone by.

Seldom could either ship fire, for both attacker and attacked were maneuvering too crazily for any aim to be taken. It was broken-field running standing still, and the Uranian "ball-carrier" was almost as elusive as West, the safety-man. The goal was the cave-mouth; and time and again, only a burst of speed which made the tiny Comet scream like a solenoid "howler" kept the way blocked. Two or three times there were actual screen-collisions, as West was caught between the rushing cruiser and the rocky hillside, and the resultant rebound sent both ships reeling out into space again. Doggone! It must sound like ten earthquakes to Doc inside there!

West's brawny arms were tingling with weariness, but still the mad, dodging battle kept on. On the enemy cruiser

a tired helmsman could be relieved by a fresh one, but West was alone. He snatched a glimpse at his watch—three hours since Doc landed. I've got to keep this baby amused for at least another hour. If I gong Tilton, I may bring some more Uries, but I'll have to take the chance. I can't keep this up much longer.

He dived again, and this time, in intercepting the bulky enemy, he had the satisfaction of pouring a rapid stream of gamma-ray charges full into his nose-armor. A tiny glow began to appear here and there like a broken halo around the Uranian ship. Hot diggety! I'm getting his screen! I can blast him in a minute. He reached a swift foot and kicked the Fessenden switch. Out into space sang the gonglike note for which Colonel Tilton was waiting. Thirty more minutes—hurry up, Doc! I think I can get this son-of-a-gun—but if one more shows up before the Colonel does, it'll be "Jenny, lock the door!" Whoopee! That one went home! He won't fire that gun again.

THE BAFFLED Uranian, her armor softened to the point where each new blast from West's gun, now throwing atom-smashing alpha-ray shells, went searingly home, suddenly began to send out signals of her own. She's licked, damn her! She's yelling for help. There'll be no help for you, Mister! With his last ounce of strength, West suddenly charged, his gun spitting in a continuous blast. The enemy's bow collapsed like an exploded paper bag, and her short-circuited power lines caught fire. Then she exploded and was not.

West had barely time to twist his helm so that he was pointed away from the ground before he slumped in his seat and for a moment everything went black. His limbs were trembling from exhaustion. But after a moment he managed to pull himself together again. I must get back to the mountainside—

although if another Urie shows up I don't know what I could do. Just park in front of the cave and let him pound away, I guess. I couldn't fly worth a hoot now. Come on, Colonel!

He hurried back to his post, and through sheer weariness his hands were twitching. He overran the ridge of rock. At once he had ample evidence that the battle had not escaped the Uranians' notice. The force-beams were going full blast, and the little Comet was sent spinning end over end out into space. West, thrown sprawling, picked himself up and mopped a cut on his forehead. Wow! Doc hasn't done much to 'em yet! There's nothing wrong with their power down there. What a beam!

Screaming at full power through space, Tilton's squadron had been able to witness the climax of West's dogfight and his subsequent fouling of the force-beam. Two Uranians had also come up—but a division of bruising Terran battleships had intercepted them and were now methodically beaming them down. The sarcastic young physicist had insisted on being allowed to come on the expedition, and was on the flagship's bridge with Colonel Tilton, his eyes glued to a visor-screen. "The old fool!" he snorted. "I knew he was bluffing. Where's the fireworks he bragged about?"

Colonel Tilton merely grunted. Little love was lost between the fighting line and the theoretical laboratories; but even a professor ought to forget squabbles after watching such superlative dogfighting as they had just seen. "He said he'd need four or five hours," was the Colonel's only dry comment.

Meanwhile West, blood still oozing over one rapidly closing eye, had regained control of his ship, and with aching arms steered her back toward the hillside. Over four hours now and still no sign from Doc. Something must have happened to him—and if it has, I'll

be responsible. I got the poor little runt into this. I'd give a leg if he were well out of it.

THEN IT LOOKED as if an entire quadrant of the little planet Ceres exploded. A searing flare of brilliant green shot at least a mile into the sky—a long, narrow, crashing belt of leaping flame that, starting in the center of the gully, ran like a racing prairie fire to either end.

"By golly, he's done it! What a burst! Boy, if I ever get the little goat out of there unhurt, I'll never let him play alone again. Whee-ew!"

On board the flagship, Colonel Tilton yelped into his signal microphone. "The power line's gone! Close in and bomb down the roof of the station!" Then as the fleet, a diving, destruction-spouting circle of ships obeyed, he called West. "You've had enough, West. You're out of action. Retire well out of range."

"Colonel! No, sir!" West answered, his jaws set and his one good eye staring out of the Colonel's screen. "I've got to get Doc. He won't come with anybody but me, and I'm afraid he's hurt!" Without waiting for confirmation or orders, West pancaked down recklessly and, cramming a helmet over his battered head, ran into the cave.

"Doc!" he shouted. "Are you all right, Doc?"

There was no answer. West scrambled on through the narrow cave, his weary legs tripping over the rough scoriated rock floor and his bruised body crashing into the ragged walls. I've got to get him out of here! If he's dead I'll never forgive myself!

Dr. von Theil, breathing stertorously, lay flat on his back just within the cave. The small opening into the gully was now considerably larger than it had been, and West, even in his anxiety, saw the smashed wreck of his "gadget" lying where it had fallen. The front of

the box was off, showing a parabolic reflector crumpled by the fall; and a mushroom-shaped lead shield was fused and twisted around its edges. Von Theil's face, even his snowy sideburns, were black; but luckily his respirator was still glued to mouth, ears, and nose and the oxygen tank was not broken. He's alive, thank goodness!

Painfully, now that the driving anxiety was gone, West managed to carry the little man tenderly back to the ship and get him inside. He ripped off the respirator, and started to bathe the blackened face. To his great relief, the black was not charred flesh. It's just burnt rock-soot and lead vapors. He's just knocked out. Golly, he must have had a wallop when the line went out!

CAREFULLY he laid the little man on a transom and stuffed his folded tunic under his head. He was strapping the unconscious body down preparatory to heading out to find a hospital ship when Von Theil opened his eyes and gasped, "In my inside pocket!" West reached inside the professor's coat and brought out a thin, flat flask. He held it to Von Theil's lips. After a long gurgle, the little man spoke in almost his natural voice. "That is good Scotch," he announced. "But you! When will you learn to be accurate?"

"What's the matter, Doc?"

"Eighteen inches, you tell me that hole is. I make my lead shield twenty-two each way to make sure; and up and down that hole is twenty-eight! In order to sight, I have to have my head above the screen—I can't see so good through the eyeholes with this damn nosy mask on. So when the power line goes—wham!"

"You sure caught it on the chin, Doc, but I don't believe you're burnt any. It just blacked you up."

"Hm-m-m. That is a fine thing—take me out here and get me blacked up. But say? You don't look so good

yourself. What you been doing to get in that fix?"

"Oh, there was an Urie ship tried to crash the gate," West answered.

"And so you fight him, eh? Always wanting to fight! Why don't you get some sense?"

"He'd have knocked the sense out of both of us if I hadn't," West was beginning, when the air lock opened and Colonel Tilton and the physicist entered. Von Theil stiffened like a belligerent terrier, then relaxed with a superior smile.

The Colonel seized the little doctor's hand and threw an arm over West's shoulder. "My hearty congratulations!" he cried. "A magnificent job! The station was a wreck even before we got to it, and there wasn't an ounce of fight in the entire crew. They were knocked silly and are all prisoners now. The whole station will be nothing but slag in another hour!"

The doctor's nose rose disdainfully and his blackened whiskers bristled. "Magnificent? *Pfui!* Kindergarten stuff! Any of your bright young men could do it if he had enough sense to be a freshman!" This with a glare at the physicist.

HE RECEIVED no answering glare. "I deserve that," the younger scientist spoke almost humbly. "I want to apologize. You were right about my being dumb. I read the Clayton papers, and I give you my word, it was not until you actually blew that line that I realized what you were doing. I still don't know *how* you did it."

"Came the dawn, eh?" chuckled Von Theil. "Well, if you guess, what did I do?"

"Why, sir, I think in some masterly way you reduced the temperature of the cable and the transformer to something around minus 260 Centigrade."

"Right, Mister. Now tell the class what that would do?"

"It would stop the random motion of the conduction electrons. It would make the entire line act like it was just a single molecule with every electron behaving in an orderly, predictable way."

"Fine! You will be a pretty good scientist when you grow up," answered Von Theil, his face now almost beaming. "But so what?"

"Why, that would reduce the electric resistance of the metals to zero; and that would mean an instant of infinite current crashed through. And naturally that blew the living daylights out of everything near."

"I'll say it did!" agreed Colonel Tilton heartily. "But how did you freeze the line, Doctor?"

"Oh, it's a ray I made once while I was in college that has a great affinity for heat. I thought it would make cheap refrigerators, because I was young and dumb myself then. After I wrecked my grandmother's kitchen, I didn't play with it any more."

"How do you make it?" asked the physicist eagerly.

Dr. von Theil shook his head warningly. "Nix!" he answered. "Things you find out for yourself, you got sense enough to use sometimes. Things you only get told, you are apt to raise the dickens with. Besides, if it got to the public, think how crooks could use it to hold up cities and towns."

"Brooks will fly the Comet home," said the Colonel turning to West. "You and the doctor come aboard the flagship for dinner and let the medico look you over after the mauling you've had. Can you walk, Dr. von Theil?"

"Sure Mike," said the little man getting up stiffly. Then he stopped as he caught the reflection of his blackened whiskers in the polished binnacle-hood.

"Say!" he cried. "I don't look so bad with black whiskers! I think when I get home I buy me some hair-dye and astonish my landlady!"

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Language for German Time-Travelers?

Dear Mr. Campbell:

That I usually read the articles in *Astounding* with more interest than the stories (there are exceptions, though) is, of course, just a matter of personal preference. But in the case of the August issue, I actually think that it contains an article more interesting and more amusing than all the stories of the same issue taken together. I am referring to L. Sprague de Camp's "Language for Time Travelers."

Since he said that he does not know enough German to predict the changes it may undergo, I will try to show what may happen to the few German sentences he used. I do not say that they were especially well chosen for my purpose, but since he did choose them I'll try and work on them.

There is now a marked tendency in German to clip words and to slur unimportant syllables—the same tendency that helped to make English what it is nowadays. Non-Germans may believe, I wish to remark, that the tendency of clipping may apply mainly to inflections, but such is not the case. They may be slurred and shortened, but they will certainly not be dropped, not even by very uneducated people. The tendency to clip and to slur is most marked in Berlin, and it is most probable that the whole of Germany will follow the example of Berlin and follow it along the same lines. Then "Guten Tag, meine Herren! Verstehen sie Deutsch?" would become: "Tach! Verstehe Deutsche?" (spelled in a way that gives some inkling of pronunciation: "takh! ferishtayn ze doytch?") Probably "takh" would be "morgen" ("officially": Guten Morgen) in a pronunciation that kills all R's and changes all G's (they are all hard in German) to something between y and j. "Morgen" therefore would be about "maw-yen" with almost missing e in "reu." And instead of "verstehen" (to understand) "können" (to know) will be substituted and result in: "kean-se" (können sie).

It may also be—although less probable—that the clipping, shortening and slurring might progress along the lines developing in the dialect of Vienna. In that case predictions as to possible changes became utterly impossible, and the only way to be understood would be to speak nothing but Latin from the moment the hero

leaves his Time Machine—Willy Ley, 32-18 79th Street, Jackson Heights, New York.

Selenium and copper oxide cells.

Dear Mr. Campbell:

In several issues of *Astounding Science-Fiction* there have been stories concerning the generation of electricity by allowing the sun to shine on a bank of "selenium cells". Sunshine falling on a selenium cell will not generate electricity, but it will lower its electrical resistance. Sunshine falling on a cell of copper-oxide will generate a current, and the author was probably thinking of this type of cell—William Huebach, 687 Broadway, Buffalo, New York.

Errors in logic.

Dear Editor:

I would like to point out some mistakes appearing in "Science Discussions" June 1938 issue of *Astounding Science-Fiction*.

First, take Marshall Hayden's letter. He states that the ether must be a dense medium because waves travel faster in a denser medium, such as iron, than in a rarer one, such as air. Well, Mr. Hayden, sound has a velocity of zero in ether; try to make an alarm clock ring in an evacuated jar, and you will see this to be true. As to light rays, they are transverse vibrations, and travel faster in rarer mediums. Therefore the fact that they travel fastest in vacuum substantiates my contention. Otherwise, a convex lens, instead of focusing light going through it, would make it diverge!

Having "raised static with the ether", Mr. Hayden does the same to gravity, and violates some basic laws of electricity while doing so. The only way I can interpret the latter part of his letter is to take it that he assumes bodies to be lighter only when they have less electrons; thus, according to his own words, "elements furthest removed from negative energy levels would seek the center, the elements with lower energy levels—that is, with fewer electrons—would seek the top." Mr. Hayden's theory is untenable because like electrical charges repel

each other, and, therefore, under the conditions he mentions, bodies with more electrons would seek the top.

His contention that gravity is caused by the pressure of the ether is also nonsense, for in the case of objects attracted toward, say, the Earth, the ether would press equally on all sides of the objects, top, bottom, rear, front, left and right, thus baying them, up instead of making them approach the Earth.

Of course, there is a flaw also in the reasoning of D. R. Cummins, who writes that man will increase in height by 2000 inches in 11,000,000 years. Mathematically, there is as much chance of factors happening which would tend to increase man's height during that time as there is of the environment being favorable to a decrease in stature; therefore, the change in height most likely would not have to be anything as great as mentioned by Mr. Cummins.

In my opinion, once the possibility of a body travelling faster than light is admitted, one can speculate as one wants about what will happen to the light emitted by such a body. No mathematical speculations covering the possibility of such an event now exist. To attain such speed denies the theories now known. Consequently, they are inapplicable.

That is all, Mr. Campbell, except for one thing. Please don't do away with science articles; surely the mistakes in "Science Discussions" indicate a need for such features. Maybe you could have such articles patterned after the type of mistakes committed by readers writing to "Science Discussions"—Casmir Pierog, 7605 Osage Avenue, Cleveland, Ohio.

Concerning "Catastrophes"

Dear Editor:

I lay no claims as to being a scientist but I do believe that I perceive one or two flaws in the article by Dr. E. E. Smith, Ph.D., in the May 1938 issue.

Dr. Smith states that "... in all probability, it will be at least ten times that long (two billion years) yet before such another system as ours can be expected to come into being." That figure would be, as he states, 2×10^9 , or two hundred billion years.

But here is the flaw as I see it. He further states that "... ours may be the only one in existence ..." at the present time. Now no one knows how long the entire Universe has been in existence, and, to figure probability, one must know the length of time past and the length of time yet to come.

One may say that a perfect hand in bridge may be dealt once in every x times, or deals. Yet two or three perfect hands may be dealt in succession and not another in two or three times x deals. But suppose a certain deck of cards is never used after the last perfect hand! How many times had it been dealt from? The perfect hand might have been the first one ever dealt from a new deck. Then what? One never knows when the probable happening may happen, but the probability is still there.

Therefore I maintain that several solar systems might have come into being at the same time as did ours. And, furthermore, if we take Dr. Smith's figures as correct, and do away with the probability factor, we may state that a solar system would have to wait 2×10^9 years, after the preceding system's birth, to be formed. Even with this we may still suppose that there is a system for every star in the heavens. Because: the Universe has been in existence for an infinite number of years, as evidenced by the fact that light from stars far, far away has reached us. Now divide infinity by 2×10^9 and let the result equal the number of systems already formed. Our equation would be: $\infty \div 200,000,000,000 = \infty$. For, as every high school boy knows, infinity divided by anything still equals infinity.

The fact that we have never seen any of these

planets means absolutely nothing. Mars is at an average distance of only 141,500,000 miles from us and we cannot see its features very plainly. Therefore, how could we expect to see planets, which are not self-luminous, of which the closest would be at least 2,620,754,091,856,000 miles away, at an average.

Not I cannot see how anyone could hope to prove, or could even say, that ours might be the only such system in existence.

As for the statement, "Of all the matter in the galaxy, only the ultra-microscopic bit we have named Earth is habitable for Man." If it could happen once—as it did—the probability in infinity is that it could, and did, happen any number of times. And as Life came into being upon this planet, it certainly could, under the rule of whatever superior Power caused it, come into being likewise upon any other such suitable planet and even take the same courses in evolution. Ergo, Man might be found in any number of places in the Universe.—D. Robert Hunt, 1709 Patterson Ave., Roanoke, Va.

That trick velocity-summation paradox arises from the Lorentz-Fitzgerald transformation equations. Any competent math man can explain it in about six pages.

Dear Mr. Campbell:

In his letter of the August issue, Mr. Allen Benson, after a discussion on relativity, expresses his hope that someone will not come along and pounce upon him. I am sorry to disappoint him; I have appointed myself as a committee of one to do the pouncing.

In discussing a problem brought up some time ago concerning a body moving with a velocity greater than that of light, Mr. Benson says that such a body would have a negative length, that is, everything would be reversed (since positive and negative are opposite quantities). For example, if the body were a rocket ship, the rocket tubes would extend forward in the direction of motion. This same idea was developed by Nat Schachner in "Reverse Universe" which appeared in *Astonishing* about two years ago.

A simple equation showing such changes in length of a moving body is $L = L_0 \sqrt{1 - v^2/c^2}$, when c is the velocity of light, v is the relative velocity of the moving body, and L_0 is a factor by which the length at rest must be multiplied. (The mass factor is the reciprocal of the length factor). For instance, if the body were moving at the velocity of light, that is, if $v = c$, then $L = 0$ and so the body would have no length in the line of motion. Now then, if the body were moving faster than light, v would become greater than c , and thus L would be an imaginary quantity. If v^2 was twice as great as c^2 , then L would be exactly $\sqrt{-1}$. Now all Mr. Benson need do is imagine a body with an imaginary length. I haven't that good an imagination.

I'll now state a problem that has been bothering me for some time, and give Mr. Benson his chance at revenge. According to Einstein, if a person were to travel away from Earth at a velocity approaching that of light, and, after what seemed just a few minutes to him, he should suddenly return to Earth, he would discover that he had been away an incredible length of time. The explanation is that the decreased time-rate at that velocity had slowed down his conceptions so that what seemed only a few minutes to him, was, in reality, millions of years.

Now, what I'm getting at is this. The person was traveling at almost the speed of light relative to Earth. But at the same time, Earth was going at the same speed relative to the person. Why haven't the inhabitants of Earth experienced the slowing down of time-rate?

Perhaps I should have done what one reader suggested before I attempted to speak on rela-

tivity. That is, go to a good college, study Optics, Mechanics, Atomic Theory, Differential and Integral Calculus, etc., etc., and everything else you can think of, and then commit suicide. Sound advice.

Before I leave, I would like to recall your words, Mr. Campbell, which once appeared in the "blurb" above a letter in Science Discussions. You said, "Quantum Mechanics shows that two bodies each traveling 185,000 m.p.s. in opposite directions are still going less than 186,000 m.p.s. in respect to each other," or some such thing. Will some kind reader, or even you, Mr. Campbell, venture an explanation of this paradox which is within my meagre understanding?—Frank De Suna, 310 Donner Avenue, Monessen, Pennsylvania.

Then $20\sqrt{-1}$ is not greater than $\sqrt{-1}$!

Dear Editor:

This letter concerns a few misconceptions in a letter written by Mr. Norman F. Stanley a few issues back. Much nonsense appears in the name of mathematics which is left pass, since the uninitiated are unable to distinguish collections of words from mathematics. This is an attempt to prevent a few pieces of misinformation from burdening a few unsuspecting minds.

The first item is the least important. Mr. Stanley, in reference to plus and minus infinity, says the latter is the former with the sign changed. The terms plus and minus infinity have reference only to magnitude—I don't think directions are associated with pure numbers; they're hard enough to deal with at best!

The second item is more serious. Stanley's definition of the "zero of analysis" is totally incorrect. His statement should read "smaller in absolute value than any assignable positive quantity, however small." Instead of "smaller than any assignable quantity, however small." Remember, Stanley, $-a$ is less than $-b$, if a is greater than b , where a and b are positive numbers. Keeping this in mind, you will see that negative infinity satisfies your definition of the zero of analysis! Which is not what you intended at all. Furthermore, the zeros of arithmetic and analysis are the same. The only number satisfying the definition I gave above is precisely that zero you see in arithmetic—it is the only number in absolute value less than any preassigned positive quantity, however small. I am not aware just what Mr. Elton Andrews' "infinitesimality" is, so I'll say nothing about it. His statement "quantities beyond infinity" has no meaning at all for a mathematician. I wonder if he could clarify that statement? I suggest he look up the analytical definition of "approaches infinity as a limit." Perhaps he will see why the statement sounds rather silly. Mathematicians are very reticent about infinity. It is a difficult concept.

Finally, he argues that imaginary numbers should be considered smaller than negative infinity. Again, I must confess I don't know what the statement means (nor do I think he knows.) Aside from that, here is the essence of his argument. He makes the following convenient, but rather dangerous assumption: If a is less than b , then $\log a$ is less than $\log b$, where a and b are different negative numbers or possibly one is zero. The statement is true for a and b greater than or equal to zero. But is it also true for a and b less than or equal to zero? I suggest Stanley examine the definition of the logarithm of a negative number in any text on the theory of functions of a complex variable (he seems amazed that such logarithms exist). He will find the logarithm of a negative number is in every case an imaginary number. Now when the number system was extended so as to include imaginary numbers, the one sacrifice that had to be made in this highly desirable, but somewhat sophisticated, extension was that of the notion of order. In other words, given two imaginary numbers,

one cannot be said to be larger than the other. The same applies for a real and an imaginary. But disregarding this, order cannot be tacked onto infinity. Which he does in his letter. Attempts have been made to order the imaginaries, but in these attempts other postulates of the number system have to be discarded—and this is worse than losing the order relation. In any further extension, some postulate must be discarded, frequently that of commutativity—William H. Pell, Lewisport, Kentucky

He did, so he couldn't, so he didn't, so he could, so—!

Dear Mr. Campbell:

Jack Williamson's thought-provoking "Legion of Time" has started me thinking so much about Time and the strange misconception of it held by some authors that I have decided to lay my own views on the subject open to the devastating pens of the readers.

There are two points over which I have plenty to say—namely: (1.) The methods used by the writer to get the hero and company messed up in future history, and (2.) how the author then calmly returns the party (probably, by then, including a heroine) to the date of departure when things have gotten a little too hot.

What is Time? In most stories it is treated as a dimension, a cycle or a stream. I believe it is none of these. Time is merely a conception in the minds of an intelligent animal. It is hardly a material as it is pictured in stories. A man learns that the Earth revolves around the Sun. While this is going on, he changes his appearance. Perhaps he grows taller, maybe he adds a few more wrinkles to his face. He calls one revolution a year. He knows it takes so many years for a stream to smooth a stone on its banks. This he calls Time. Time, then, is relative. If there were nothing by which to compare the wearing down of the stone, there would be no Time. And even with all factors—the Sun, the Earth, the stream and the stone—there would still be no Time if there were no intelligence to compare the factors. Now that I've tried to establish that Time is relative and is a conception, I'll continue.

Point 1: There are many ways used by authors to get people mixed up in the chronological paradox. Suspended animation, vibrations, coils, super speeds, dimension machines and many contraptions they don't even bother to describe. Now, if there is no such thing as Time, there can be no travel in it. There can be apparent time-travel, however. When you slow down a person's senses as in sleep, Time would appear to go faster. So by using the as yet unknown suspended animation drug a man would "sleep" through a thousand years in the apparent twelve hours. But this is not time-travel. And yet further from man's grasp is another "time-travel" method. The Lorens-Fitzgerald Contraction Theory provides that at speeds approaching light, Time appears to move faster to the one going at that speed in relation to the clock he carries in his ship. But neither space nor time (that word again) permit me to go further into that theory.

Point 2: (I'll make it brief). Going reverse in Time. This is both absurd and contradictory. What has happened cannot be changed. A person, if he could, mind you, go into the past, would be in great danger of cancelling his self by some action. Nat Schachner illustrated that in his "Ancestral Voices", even though he contradicts himself in so doing. If a man went into the past, the chances are millions to one that as a result of his visit he would make his birth impossible. And if he was never born, he could not have gone into the past, as he did, to kill himself. A paradox all right, but I hope I make myself clear. And yet, with all that—time stories are my favorite—Mark Reinsberg, 430 Surf Street, Chicago, Illinois.

BRASS TACKS

The one kick on de Camp's article!

Dear Mr. Campbell:

The July issue of *Astounding Science-Fiction* is the best yet. The cover by Brown is excellent. "The Men and the Mirror" takes tops. I have enjoyed this series by Ross Rocklynne very much, and would like to read some more adventures of Colbie and Deverel. I do not see just how we can have more of them though, now that Colbie voluntarily let Deverel go, but I would not have had it happen any other way. The whole effect of the stories would have been spoiled if Colbie had taken Deverel to prison.

"The Secret of the Canali" by Clifton E. Kruse is next on my list in order of merit. I think that this is the best story that Kruse has written so far, and he has turned out some pretty good material.

"Good Old Brig" by Kent Casey, is next. Then "Hotel Cosmos" by Gallun, then "The Dangerous Dimension" by Hubbard, "Rule 18" by Simak, followed by "Voyage 13" by Cummings. Ray Cummings has turned out much, much better work. It was not bad, but I put it at the end of my list simply because all the other stories were better.

I didn't think that I would ever be pleased in any science article of *Astounding*, but now I see that I was mistaken. I enjoyed McCann's article immensely. As for the other article, I have been wondering how it got into *Astounding Science-Fiction*.

I am not classing the "Legion of Time" by Jack Williamson in this list. As I told you before, Williamson is my favorite author, and I also told you that his tale is very good.

I would like to see you publish certain science-fiction stories under separate cover to sell as the old s. f. magazines used to do. How about it? If we can't have an *Astounding Quarterly*, these separate stories will do as a substitute. Willard Dewey, 1065 Charles Street, Everett, Washington.

From Kent Casey.

Dear Mr. Campbell:

It was a long wait for the July number, under the new timing, but the number was worth waiting for. At the risk of adding votes against "Good Old Brig," I feel compelled to put in a cheer.

First for Jack Williamson. "Legion of Time" is the first continued story in any of the science-fiction group which I have ever read which did not stagger and wag a bit at the end. It marched to a climax in a rising crescendo. A grand job.

Of the short stories, I don't know whether to hand the enshrouded fire-engine to "Rule Eighteen" or "Dangerous Dimension." Two swell yarns!

"Language for Time Travelers" was not only interesting and well done, but it contained a feature that I have often wished for after reading a science article—a bibliography. Too often an author will get this particular reader all stirred up, but condemn him to go plodding through public library card-catalogues trying to find something pertinent. It is frequently a long job, for cataloguing is not yet an exact science in libraries, and titles are misleading.

No quarrel with the rest of the magazine—my mind those four were stand-outs—Kent Casey.

Kent Casey's a Navy man.

Dear Mr. Campbell:

Reader's report, July issue:

1. "The Secret of the Canali"
2. "Legion of Time"
3. "Good Old Brig"
4. "The Dangerous Dimension"
5. "Hotel Cosmos"
6. "The Men and the Mirror"
7. "Rule 18"
8. "Voyage 13"

"Language for Time Travelers" is excellent, placing right at the top. "Giant Stars" also good.

Is Kent Casey ex-Navy or ex-Marine? He has the language down pat. Didn't care much for his conception of the alien planet—too simple. But story good, nevertheless.

"The Secret of the Canali" started well, but sort of fizzled out. But it still managed to pull first.

Missed last month's reader's report. Put "Seeds of the Dust" in first place, though—and miles ahead of all the others.

Liked "The Dangerous Dimension"—mostly for its style. July issue good, all in all—Allan I. Benson, Box 17, U. S. S. California, San Pedro, California.

But—Sprague de Camp spent 15 years learning to write that article.

Dear Sir:

The writer is a soured individual who expects the best out of your magazine and hopes to be of some value as a goad and gadfly. Why not, in that case, insist to your pampered authors that they write stories in which something really happens? "Good Old Brig" deserves a Good Old Brickbat because some vaguely funny incidents occur and that is all. Kent Casey can sling around the technical language of target shooting. So what?

For Messrs. Casey, Cummings, Kruse and Norman L. Knight I suggest readings and re-readings of the word science-fiction. Oh, sir, the canali of Mars are a weird place for a lad, but the "Secret of the Canali" when solved is a vague, backhanded fashion with no explanation whatever should be named "The Apotheosis of Sidney Berkowitz" and kept in the author's files for his own light reading. I give him credit only for the name, Sidney Berkowitz. It is realistic.

"Voyage 13!" Politics and death loose on an interplanetary liner—quoted. But don't get excited, fellows. It's only a beautiful heroine, a naughty villain, and a way of getting around him. This formula has made some masterpieces, but Cummings wrote it with his left hand during a hangover. Take away from my door those omnipotent heroes, those villains who are so, so careless at just the right moment. A villain may be careless—right. But this villain—and the villain in "Hotel Cosmos"—just wait to get put on the spot. This may account for both stories which are a hash of old ideas covered with spurious characterization. The authors were too tired to work up something new.

"Legion of Time" made me awfully mad. Take a hero, beat him up, cure him, beat him up, cure him, beat him up, cure him, give him the girl and what was it all about—a stretch of formic acid? It was all the more hideous because the idea of the story was very good. The Ford magnet action was de-lovely. If only the old

guy from the future had kept his reviving hand out of it. But when Isaac and Israel Anders died so dramatically I saw dross in Jack Williamson's gold, and the rest of the deaths plain as day. Except Soraliya's. My hat is off for that idea too. But there was another dopey villain for you. They got into Soraliya's hall so easily. Why don't your writers force their heroes to think out clever ways of outsmarting villains. Now, hold on—a natural way will do. The hero can still be awfully dumb. Mr. Scherer's Joshua is a case in point. Kent Casey's Dr. Von Theil is the perfect example of a smart scientific hero who outwits villains through cleverness.

I'm awfully sore because I can't find a thing wrong with the "Men and the Mirror," save a certain self-conscious drama. Of course, it's silly to suppose that the cop will chase the crook into that kind of thing every time—but, taken as a story, it's A-1 stuff.

"The Dangerous Dimension" is A-1—minus. The minus is given only because the author might have gone to the library and copied out some convincing philosophical precepts with which to enlighten and entertain us. No background to the tale, if you get what I mean. Otherwise, A-1 perfect.

"Rule Eighteen" is stretched beyond its natural end. But fair enough. B-plus. Good writing.

"Language for Time Travelers" is absolutely wonderful. There is an example for your fictioneers—documentation, painstaking. Of course, you fellows stretch things unrecognizably—O. K. But at least start with one toe on the ground before you take off. In case you didn't notice—"Language for Time Travelers" is absolutely marvelous.

But "Giant Stars" is a bit too stuffy. Good facts, interesting if you pry them apart, but too many in a lump, with no icing.

I mentioned Norman L. Knight, from the June issue. His "Isle of the Golden Swarm" was all fantasy with no science—all lead-up without story. Looks as though he started a trend which you just about tripled in this issue with "Secret of the Canali," "Hotel Cosmos" and "Good Old Brig." Hope you're not sore. You've still got the best science-fiction magazine on the market and the only one readable for adults—Albert P. Quill, 502 Church Avenue, Brooklyn, New York.

Contributions should be typed, double-spaced, on tough, white paper. Enclose return postage. You'll get an answer within two weeks. Address The Editor, Astounding Science-Fiction.

Dear Mr. Campbell:

Before me I have my copy of the July issue. For my second letter to Brass Tacks I will give my opinions upon it.

I'll start with the cover. It's a swell cover! Artist Brown has it all over Wesso when it comes to cover paintings. And speaking of artists, Wesso's style has changed. Compare his lousy illustration for "Good Old Brig" with that for "Hotel Cosmos." Wesso signed the "Brig" picture for "37" and the other was done this year. He must have noticed how rotten he was getting. He's the best artist in his class—when he wants to be. Dold's the best in science-fiction—same conditions, of course. But Dold is different in that he has no competitor or even imitator (unless you take in Marchiori who doesn't count anyway).

I was particularly interested in your editorial, "Contest," for I am writing a story which I hope to send you in the near future. By the way, would you please tell me to whom I should send contributions?

Now for the stories: Here's my opinions on them in order:

1. "The Legion of Time." Following my resolution never to read a story until I get all the installments (which I broke only for "Galactic Patrol") I read all three parts of Jack Williamson's swell story a couple of days ago. I thought

it would be good and I was not disappointed. Williamson's never disappointed me.

2. "The Men and the Mirror." I've always liked Ross Rocklynne, and he's at his best with problem yarns. Let's have some more about Colbie and Deverel. They always get out of their entirely plausible messes in an entirely plausible manner.

3. "Good Old Brig." Keep this newcomer, Kent Casey. This is his third story. The more I read him the better I like him. But how about some more West and Von Theil?

4. "Voyage 13." Ray Cummings' story is out of the ordinary in that the heroine is blind. Just an ordinary spaceship story, but well-written.

5. "Rule 18." This story of Simak's has a different twist to it and is a humorous one despite the more or less tragic ending to Jimmy.

6. "Hotel Cosmos." Your most frequent contributor, Raymond Z. Gallun, comes forth with another. Gallun is consistently good.

7. "The Dangerous Dimension." A newcomer to the field, Hubbard makes good. Judging by this story, he's quite promising.

8. "The Secret of the Canali." Kruse's story is the worst in the issue, but believe it or not, it's still a good one!

This issue seems to be exceptionally good. There wasn't a bad story in it. Isn't that some sort of record? This is one of the outstanding issues of 1938 so far, equal with the epic March issue, which continued that masterpiece, "The Master Shall Not Die."

L. Sprague de Camp's "Language for Time Travelers" was super-good. I buy the magazine for the stories, and seldom read an article. But I read this one because the title caught my eye. It was unique, on a subject I knew nothing whatever about. I didn't know that English changed so much.

Thanks for a swell magazine, Mr. Campbell. All the good things I said about you in my last letter go double. But please do these things: remove the ads that border Brass Tacks; cut down to one science-feature a month, and use the space for a complete novel like we used to have. And, maybe, even do something about a quarterly.

I'd like to hear from science-fiction fans, anybody, anywhere, but preferably from Duluth or the Twin Cities. Come on pals! Please write! —Tony Strother, 5020 Dodge Street, Duluth, Minnesota.

His card said: "Occupation—Research Psychologist".

Dear Mr. Campbell:

This may be over your deadline—but it is the first Sunday since I was able to get hold of this issue of Astounding, and I shall enjoy complying at leisure. This is going to be fun.

COMMENTS ON ATTACHED ORDER OF PREFERENCE.

PRELIMINARY COMMENT: Order based on subjective rating of pleasure in reading the story, not on analytical evaluation of story value. The "reasons", as given below, are "post-mortems". (Notoriously unreliable).

FIRST PLACE: Stuart's "Who Goes There?" Mr. Stuart's "science" might trouble the soul of a biologist. I have no doubt it would. He does not attempt to make his incredible premise credible—even conceivable. Bat—

Given the premise, he is utterly convincing. If that situation should happen, the human being he has drawn would, I think, feel and act just as I like . . . that refreshing! Good suspense, too.

SECOND PLACE: Macfadaya's "Jason Comes Home"

Not a heavy-weight story. Second because I enjoyed reading it, next to Stuart's. On analysis, I don't know why. Perhaps the kid appealed to me. He is sketchily drawn—naturally, he would have to be

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—but you see him, and he has your sympathetic
attention.

THIRD PLACE: Jameson's "Eviction by
Isotherm"

Perhaps because one can conceive of its hap-
pening. And "sees" it happen.

FOURTH PLACE: Burks' "Hell Ship"

Mr. Burks, you are here when you should
be at 1 or 2, with the "sweet" idea you had.
More than that, I like space yarns, *per se*,
better than the kind I've put higher. I like
them because they have a way of giving the
imagination a good stretch, and this reader
reads science fiction for that. Because I do
like them, and liked your ship and was
sorry for her, I have some things to say to
you:

Why did you put characters conditioned to
19th and 20th century stereotypes into that
beautiful ship you visualized? Did your im-
agination reach its ceiling at that point? As
good an imagination as yours—I cannot
think so. Then is it that much-misinterpreted
saw about "human nature cannot change" that
forces stock characters from a dated naval code
and a background of transient, twentieth-century
economic relationships upon a ship that makes
both incongruous? Incongruous is mild. Here is
what I mean:

A yarn-spinner of A. D. 938 let his imaginat-
ion loose. He visualized travel through the air
and under the sea—even communication at the
speed of light. Because he, too, had heard that
"human nature does not change", he left the
only human relationships he personally knew—
the medieval, feudal hierarchy of his bit of time-
space—unchanged by any of it. He worked up a
conflict-theme in which the hero was torn be-
tween his duty to these new devices he had
invented, and his duty to his lord. It looked
as if he was about to tear up his inventions,
perhaps at peril to many, out of his inherited
loyalty to his anointed lord—but a girl inter-
vened. Then it looked as if he was about to be
drawn and quartered as a traitor to his lord—but
a girl intervened. The conflict was resolved
when the girl persuaded his lord to forgive him
this time for putting the former duty first. So it
ended, graciously, as he bowed his knee and
received the accolade.

His story sounded "wrong". It was incongruous
—somewhere. It could not be in the human re-
lationships, for they are eternal, so it must be
that these figments of his imagination were just
plain impossible. That must be it. He did not
know why. But we know. We know that these
things he imagined are not impossible, but that
the things he forced together are contradictions
in terms, that one could not endure the other.
We know, even, that the one could not come
until the other went.

Have I made it clear that I am not a com-
munist, a socialist, or a pleader for any par-
ticular "list"? They are dated, too—tied to our
transient time. As to what tomorrow's set-up
will be, I'll accept anything your imagination
offers—except the claim that we will evolve to
the level of space-travel in our mastery of tools,
and remain frozen to the tiny plan-prick of here-
and-now in all other respects while we are doing
it. It is a tendency always to assume that, but
man, we can't! We aren't built that way!
Everything we do changes our relationships
while it is altering our environment (including
the Caperton-Parsons-marines (!) anachronism
under "everything"), whether we want it to or
not. The Caperton-Parsons set-up, or whatever
is a given time's set-up loses—after conflict
usually—to tomorrow. To another solution,
conditioned by another environment. It may be
a "better" solution. It may be a "worse".

No, Mr. Burks. Get that rotor-shaft neglected
for any reason you want to, for your yarn's
sake—except by projecting without imaginative
alteration the set-up you happen to be born in.
And complicate it with any master-man problem
you want to, except picking out worn today's
relationships up bodily and setting 'em down in a
spaceship of tomorrow. Human conflict of
personality is eternal, but master-man relation-
ships, on shipboard and off, are no more change-
less than transportation-types are. Anyway,
they haven't been, so far. Some ships, long ago,
were manned by comrades who selected their
leaders, had the right to depose 'em at the end
of any voyage! Fact. And "human nature"
Times changed. Ships were manned by slaves.
Also "human nature". Times changed, and—
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no exception in the case of the giant blowtorch, in spite of the artist's interpretation. If you must have better stories, Mr. Campbell, let them conform to this. I have no objections to a ray gun or a spaceship, but for goodness' sake, give the characters some brains. The plot should be a struggle of intelligence, not weapons. Please call a halt to the procession of half-witted heroes—e. g., those in "Asteroid Pirates" and "Resilient Planet", of which the less said the better.

If "Who Goes There?" is the best plot, "Hell Ship" is the best character study in the issue. Josh McNab is a good one, but Mary Purdy is the best study. There, gentlemen, is actually a heroine with a personality—almost the only one in captivity! The yarn is a good, ordinary space story, but the science is very shaky. A. J. B.'s conception of the effects of lack of gravity is full of holes and inaccuracies (though I am glad to see he recognizes that it feels like a never-ending fall through space). But his most peculiar idea is his "Gravitic field", apparently composed of individual "lines" of force, like a spider-web! No doubt there will be a storm of letters to Science Discussions setting him right. Gravitic fields are homogeneous and continuous, and not made up of separate lines.

The issue wasn't as good as your last two or three, but who will demand unceasing perfection? Certainly, not—Donald West, Acadia University, Nova Scotia.

Well, we try to merit this.

Dear Mr. Campbell:

You have undoubtedly improved Astounding by giving us new authors, better stories and artists on the cover and inside, and new, more interesting departments to such an extent that it has now equal, and is progressing, slowly at first but now more swiftly, to the inevitable pinnacle where it shall parallel the unforgettable days of '29 and '30. Now and then you are bombarded by cranks who burn you and your magazine in effigy, but those are far and few between—and crazy. There are naturally some defects as can be expected—such as the absence of a quarterly, large size, etc.—but you have given us in the long run practically everything we asked for.

Not too mathematical, not too simple, Willy Ley's science article hit the spot. As a result of reading science-fiction my interest was aroused in rocketry, and I have read all available material on that subject and so any additional information is enjoyed. In connection with rocketry, I would like to find out whether any of the readers or you, Mr. Editor, know where and whom I should contact to obtain information on the American Rocket Society?

The cover for the August issue was excellent. One of my pet peeves is to have titles of stories and authors' names spread all across the front of the magazine. In the last few issues, whether the cover was an astronomical plate or otherwise, it has been entirely void of this type of error, that is, the picture itself is not disfigured.

Since I started to read science-fiction only two years ago, my collection has huge empty spots in it. I wonder if any of the readers have copies of the various science-fiction magazines they would like to dispose of? Please get in touch with me if so.

As I have recorded on the slip provided for the story by Don Stuart "Who Goes There?" was in my estimation the best in the issue. It was admirably written, and it held my interest

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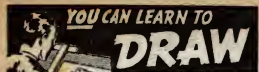
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throughout the entire story. The idea of an animal having the ability to convert its shape into that of any other form perfectly is a novel idea. In fact, every story in the issue was written excellently and for the most part embodied fresh ideas—Don Thielke, 2735 No. 45th Street, Milwaukee, Wisconsin.

Remember these yarns?

Dear Editor:

I've been a constant reader of Astounding Science-Fiction since early in 1932, but this is my first letter to you. I just had to rise to the defense of my favorite author, Nat Schachner, who was recently "panned" by one of your readers. Perhaps it is true that a couple of Mr. Schachner's stories weren't up to par, but for an author who has written as often and as well as Mr. Schachner has, I think that Mr. Hender (not his name, of course) will have to admit he has done very well for himself and his readers.

A glance back through the years will show that he has such four-star stories under his name as: "Slaves of Mercury," "Ancestral Voices," "Mind of the World," "Redmask of the Outlands," "I Am Not God," "Pacifica," and a host of others. "Slaves of Mercury" was printed in September 1932, and I have yet to read a short story by any author which surpasses it to any great extent. I believe the above list of stories speaks for itself and is an adequate answer to criticisms of Mr. Schachner.

And while I'm glancing back through the past, I'd like to list some of the stories by other authors which stand out like giant stars in a firmament of lesser lights. They include "The Raid on the Termites" by Ernest, the Hawk Carse stories by Gilmore, "Rebirth" by McClary, "The Legion of Space" by Williamson, "The Skylark of Valeron" by Smith, (the best serial ever published), "The Mightiest Machine" by Campbell, "Colossus" and "Colossus Eternal" by Wanders, "Old Faithful" by Gailton, "The Galactic Circle" by Williamson, "Strange City" by Van Lorne, "Spawn of Eternal Thought" by Binder, "Frictional Losses" by Stuart, and "World of Purple Light" by Van Lorne. More recently, you have given us the "Past, Present and Future" series by Schachner, "Seeker of Tomorrow" by Russell and Johnson, "Galactic Patrol" by Smith, and "Men Against the Stars" by Wellman. And, by the way, if ever a story cried for a sequel, then that story must have been named "Seeker of Tomorrow". How about it?

I see that my list of favorites has grown to a rather lengthy list, and still I could go on, but I think I should stop if I want to gain a little attention from you or space in Brass Tacks. In concluding, though, I want to tell you I think Astounding is tops in both stories and illustrations, and it is improving all the time—Frank Alford, Jr., Ingleside, Texas.

Coke-lined rocket experiments.

Dear Editor:

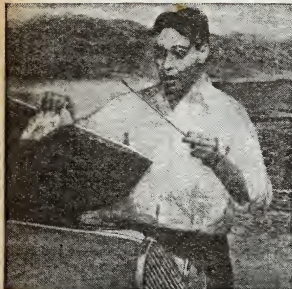
After all that advance publicity about "Hell Ship", the story let me down. If I had read "Hell Ship" and "Who Goes There?" without having read the praises for the former, I probably would have had a slightly different reaction. When I had finished reading R. M. Wood's letter concerning fewer science articles, I found that I had sprouted a huckle. How he can expect to condense an article such as "Orbits, Takeoffs and Landings" to a page, and still have an article is beyond my present comprehension.

And oh, yes, why didn't the engineers on the cover wear dark glasses while repairing the motor shaft?

Perhaps your readers have not heard that Frank J. Malina and H. S. Twiss of the California Institute of Technology are testing a rocket motor with the combustion and exhaust chambers lined with coke. They hope to reach 1000 miles up according to report.—Grady L. McMurry, 151 N. Euclid, Pasadena, California.

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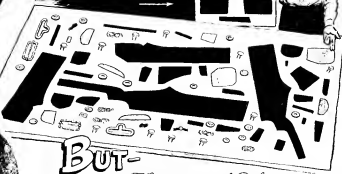
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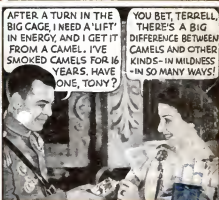
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